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ONE year ago a novel department was added to the columns of the ENGINEERING AND MINING JOURNAL. It was started as a convenient means of bringing intending purchasers and sellers of machinery and miscellaneous supplies into direct communication with each other. This has been accomplished by inviting all persons, firms and companies desiring to obtain any of the *materiel* used in engineering and the industrial arts to write to us, stating plainly what is wanted. Their wants are then advertised without charge in the ENGINEERING AND MINING JOURNAL, and at the same time we notify manufacturers and dealers in the particular line of goods called for that such buyers are on the market. In this way we have put both parties in correspondence, to their mutual benefit. Buyers have the advantage of securing competitive offers, and sellers are enabled to extend their business. By not limiting this service to subscribers it has been made free to all. The system is especially useful to foreign purchasers who wish to obtain estimates on American machinery and quotations for American goods generally, and we cordially invite them to avail themselves of the opportunity.

We are happy to announce that the year's experience has been most gratifying. Through this exchange department many satisfactory transactions have been brought about, some of them large orders. The serial number of the advertisements has already reached 941. All this has involved a great deal of work on our part, for which we get no direct compensation, for we are neither dealers nor brokers, and do not accept any commission. But in this way the value of the ENGINEERING AND MINING JOURNAL to its subscribers and other readers, and to our advertisers, manufacturers, dealers and exporters, has been largely augmented, and our efforts have met with appreciation on all sides.

How utterly insignificant American shipping has become under the fiscal policy which has been maintained since the war is shown very strikingly in the following figures. Of the 73 steamships touching at Chilian ports last year 31 were English, 23 German, nine French, seven Chilian and three Italian; not one American.

To ship goods from New York by steamer to Valparaiso costs more than half as much again as from Liverpool and Hamburg, and the comparatively low cost of sailing freight is more than offset by the from 90 to 130 days required to make the trip. Thus, it may easily happen that the Chilian buyer will receive his bills of lading and draft two to three months before his goods arrive, and he will be expected to remit promptly.

The rates, routes and length of time of voyages are:

STEAMER.	Heavy goods per ton.		Days.	
New York to Valparaiso via Panama	$34.00	to	$35.00	30 to 35
" " via Hamburg	21.00	to	22.00	50 to 60
" " via Liverpool	22.00	to	23.00	45 to 50
Liverpool, London, Glasgow, Bordeaux, or Havre to Valparaiso	5.50	to	7.00	35 to 40
SAIL.				
New York to Valparaiso	8.50	to	9.50	90 to 130
Liverpool or Glasgow to Valparaiso	5.50	to	7.00	.....
Hamburg to Valparaiso	4.56	to	5.50	.....

Of the imports into Chili from this country 80 per cent. is rough stuff which goes by sailing vessel, 10 per cent. via Panama and 10 per cent. via Europe. Thus has the American exporter not only to contend against low prices, but is hampered by having to pay six times the freight charged from English ports if he desires to ship from New York via Panama, and nearly four times as much if he ships via Liverpoool. It is scarcely a matter of surprise that the percentage of American trade with Chili is small.

Just how all this works against us is succinctly stated by American Minister Patrick Egan at Santiago.

"The Chilian Government, while most friendly towards American machinery, is just now receiving for the Government railroads 38 locomotives and about 800 cars manufactured in England upon American models, and I have been assured that this order was placed in England in preference to the United States solely on account of the cheaper freights and more rapid delivery.

"The President and Government of Chili are most anxious to promote more extensive trade with the United States, and, with this object in view, are desirous to see established between the principal ports of the United States and those of Chili a direct, regular and rapid steamship communication. I have assurances that Chili is prepared to contribute her full proportion of any reasonable subsidy that may be necessary to secure the establishment of such a steamship service."

EXPORT TRADE TO THE AUSTRALASIAN COLONIES.

While the statistical figures with regard to our export trade with South America are most disheartening, and disclose an unsatisfactory condition of affairs for us, our efforts in securing a foothold in the Australasian colonies of Great Britain have met with greater success. That this is recognized in England, and even viewed with alarm, lest the growing popularity of our goods should displace British manufactures to a still greater extent, is evidenced by the attention being given to the subject by the London press. The London *Financial News*, after pointing out the strong geographical hold that we have upon the West Indies, and the great increase of American capital invested in these islands, says:

"What should produce a greater feeling of alarm in the British commercial mind, however, is the fact that our American rivals are now attacking our stronghold at the Antipodes. In Australia itself, so far, the competition has not assumed very serious proportions, being confined to a great extent to the 'book-hawking' line of business. In New Zealand, however, the position is vastly different. That which began with 'book-hawking' ten or a dozen years since has now developed into an important commercial connection between the colony and the Pacific slope of the United States, and all the efforts being made to divert the stream in the direction of Vancouver are powerless to interfere with it. What makes the position a trifle more awkward, regarded from the English point of view, is the fact that the recent federation movement in the Australian colonies has evoked from an influential section of the people of New Zealand a strong expression of opinion against the proposal to incorporate that colony in the projected federal system at the Antipodes."

This disinclination on the part of New Zealand to throw in its lot with

the Australian Colonies in the federation scheme no doubt arises from the fact that they are not near neighbors in any sense, although generally supposed to be so geographically by persons who have not been there, or who have not been extra well schooled in modern geography. The distance of New Zealand from Australia is 1,200 miles, which places the former colony in rather an isolated position naturally, and apparently they have no desire to emerge from their isolation.

The fact that New Zealand can import from San Francisco most of the goods she requires from England, in about half the time, is, perhaps, a sufficient reason why our trade with the nearer colony should have assumed more important dimensions than with Australia itself; but there is another reason admitted which has, no doubt, told heavily in our favor, and it is a lesson which should not be lost upon our merchants and manufacturers, more especially as it applies with equal force to the more important markets of Australia, South and Central America. The English export houses seem to have forgotten everything in the keen competition with their German rivals, and as the Germans reduced their prices and the quality of their goods the English shippers went one better, until the Colonial markets have been flooded with cheap rubbish, while the American goods are recognized to be a fair, honest article, even if a little higher priced.

SMELTING OF TITANIFEROUS IRON ORES.

A paper recently read before the American Chemical Society gives some interesting facts concerning the successful smelting of iron ore containing high percentages of titanium. This element has generally been held in disrepute by American iron masters, and they have gone so far as to say that the result of their experience has been that a mixture containing a greater percentage of titanic acid than 1·25 per cent. could not be successfully used. When present in greater quantities, titanium has a tendency to render the slag pasty, and clog the furnace with titanium deposits if it is not made by judicious treatment to pass into the slag. On this account many deposits of titaniferous iron ore have been neglected as of no value, although such ores are apt to be very free from phosphorus, and therefore are especially suitable for Bessemer iron.

In Sweden and Norway, however, ores containing 5 to 10 per cent TiO_2 have been smelted alone in charcoal furnaces, others containing 15 to 20 per cent. TiO_2 or more have been smelted in admixture, or even alone, and, lastly, Norway ores containing as much as 40 per cent. TiO_2 and only 36 per cent. of iron have been smelted by a company in England with perfect success, as far as the metallurgy of the treatment was concerned, although at considerable expense for fuel.

The successful treatment of these titaniferous ores depends entirely on the choice of fluxes to obtain a desired result. Certain natural compounds of titanium, such as sphene, calcium silico titanate, and keilhanite are perfectly fusible in a blast furnace and the composition of the slag run from the furnace should be made to approximate in composition these natural compounds. The following is the analysis of ore which has thus been successfully smelted in a Norway ilmenite:

Titanic acid, 39·20 per cent.: ferric oxide, 18·59 per cent.: ferrous oxide, 30·00 per cent.; alumina, 2·89 per cent.; manganese oxide, 0·60 per cent.: silica, 5·70 per cent.; loss, 0·22 per cent.; iron, 36·3 per cent.

The following was the composition of the slag, compared with natural sphene:

	Slag.	Average sphene.
Silica	27·83	31·78
Titanic acid	36·18	40·00
Lime	24·36	24·53
Oxide of iron	1·86	2·00
Alumina	9.18	2·00
Magnesia	0.60	2·00

All the titanic acid of the ore has been made to pass into the slag excepting the small percentage left in the pig metal, perhaps 1 or 2 per cent., and the titanium having thus left the furnace, it could not in any manner be the cause of obstruction by hanging or deposits.

FIFTIETH VOLUME OF THE ENGINEERING AND MINING JOURNAL.

With the present issue the ENGINEERING AND MINING JOURNAL enters upon its fiftieth volume, its first appearance having been on March 31st, 1866, under the name of the *American Journal of Mining*. The original title was changed at the beginning of the eighth volume, in July, 1869, to that which the JOURNAL now bears, as better describing its scope. As Dr. RAYMOND then said, editorially, "the departments of mining and civil engineering are so intimately related that no periodical devoted to the one can properly exclude the other. If, on the one hand, every civil engineer is not a mining engineer, at least every good mining engineer must be acquainted with those laws of construction, measurement and calculation, the use of which constitutes the occupation of the civil engineer." From the outset the policy of the JOURNAL has followed the lines originally laid down, but its scope has been gradually widened, and necessarily so, since with the development of each branch of engineering the mutual relations become closer, notwithstanding the tendency toward specialization.

As the official organ of the American Institute of Mining Engineers, the ENGINEERING AND MINING JOURNAL was the most efficient promoter of the cause of the Institute, and contributed more than any other one agent to its success. When the "Transactions" of that society far outgrew the capacity of a periodical, the JOURNAL, though obliged to decline their publication, was still the active co-worker with the Institute in the common cause of the advancement of the profession and the promotion of the well-being of those engaged in mining and metallurgy.

It would be invidious to single out a few of the names of the men who have at various times been connected with the staff of the ENGINEERING AND MINING JOURNAL, directly and indirectly. The whole list would be a long one. But we may mention that Dr. RAYMOND became editor in October, 1867, and that the present editor, Mr. R. P. ROTHWELL, began his functions in January, 1874, making a specialty of what was then a new department of the paper—coal and iron.

During its history a number of other technical periodicals have been consolidated with the ENGINEERING AND MINING JOURNAL—the New York *Coal and Iron Record* (July 10, 1875), the *Polytechnic Review*, of Philadelphia and New York (January 4, 1879), the Denver *Mining Review*, the *Brick, Pottery and Glass Journal* (1880), and *Coal* (1883). In absorbing these papers the JOURNAL has steadily increased its field while gradually enlarging in size.

We might, perhaps, be pardoned if we should indulge in a little natural self-laudation in celebrating this anniversary. We might "point with pride" to the remarkable growth of the JOURNAL in circulation, in advertising, in variety and value of contents, and in increasing influence for good; and, best of all, to the steadfast adherence of our friends, who *are* our friends because they like a paper which never puffs, and which can always be counted on for honest and fearless opinion. But we will let the JOURNAL speak for itself. The motto of the JOURNAL is *Excelsior*. It has been a potent factor in the marvellous development of mining and metallurgy in this country, and has earned and receives the appreciative thanks of those engaged in those arts the world over. The progress it has been so largely instrumental in bringing about in the industries to which it is devoted has been reflected in the growth of the JOURNAL itself.

Although in mining and metallurgy America now easily leads the world, yet these arts are still but in their infancy, and if the ENGINEERING AND MINING JOURNAL has advanced far beyond its modest beginnings a quarter of a century ago, it is still in its early youth, and expects to attain in the next quarter of a century a growth still more rapid than in the last.

THE ECONOMIC LIMITS OF CLOSE WORK IN MINING AND METALLURGY.

A distinctive feature in American practice, both in mining engineering and in metallurgy, is the rigid discrimination which our engineers observe between technical and commercial results. This has been forced upon them by the conditions of the mining industry, and, having been learned by dint of hard experience, has at last become axiomatic, and is now not only the basis of choice of method by the older operating engineers, but is one of the cardinal principles insisted upon in the course of training at the best technical schools. The distinction is so universally recognized and acted upon by the men actively engaged in mining that it would seem almost superfluous at this period to revert to it. Yet there are very many persons, outside of the profession, who do not realize the vital importance of maintaining a sharp definition between close technical work and that which, under given conditions, is the most successful commercially. There are inexperienced inventors of machines and processes who ignore it altogether, and propose innovations for making savings at a loss (if this bull may be pardoned).

There are also investors who wonder why their superintendents do not achieve as high results under one set of limiting conditions as are attained in other districts where the circumstances are entirely different. The public is gradually being educated to a better conception of the mining industry, and is becoming year by year more rational in its demands and expectations, though it will always be dependent upon the experience and skill of its professional agents, for it is not to be expected that business men whose time and attention are more or less occupied in other pursuits can master all the intricate problems presented to specialists.

But there is another class whose criticism of American methods is far more weighty. We refer to the foreign engineers who watch with interest the progress in mining and metallurgy which their confreres here are making. In almost every department there are divergencies between our practice and their own. Sometimes these result in apparently poorer returns, and a superficial examination of such cases—without full knowledge of the restricting influences—the "environment" naturally leads to unfavorable comment. The truth is, that methods suited to one place and time may be utterly inapplicable to other places and other times.

We have in mind particularly the mining and reduction of gold and silver. With both these metals there are often great and well understood losses. Sometimes these losses are due to inefficient direction, but more

frequently they are deliberately permitted, being kept down as nearly to the limit of commercial profit as possible. The engineer may recognize and frankly admit that he is losing a great deal, that it would be gratifying to make a better showing scientifically, and that there is much room for improvement in the future. But if he is skillful and conscientious as well, he has to content himself as best he may with doing what he can *under the circumstances*. He will not spend $1.25 in time, labor and material for the sake of getting out $1 more in bullion.

The mining of gold and silver in this country almost invariably implies high freights, high wages, dear supplies and the general disadvantages attendant upon sparsely populated regions. It also implies higher interest charges and more impatience and a greater speculative tendency on the part of shareholders than is the rule in older communities. All these things become ruling factors in the problem for the engineer. The question of time alone is of imminent moment. Thus we see vertical shafts equipped with expensive machinery pushed downward in the face of heavy inflows of water, where a more conservative system would involve the driving of long drainage adits. But these latter would take more *time*, and the limitations imposed upon the engineer may not admit of that. Hence the apparently extravagant pumping plants.

On the same principle, mines are worked to full capacity and their ores shipped at high freight charges or treated on the spot with seeming waste, when it is well known that by waiting a few years until railroads are built and the adjacent country further developed, better results might be had. The time element enters into the problem in many other ways, as, for example, where a mill or smelter is overcrowded and its daily tonnage forced to an extreme. The engineer takes the plant as it is, and makes the best use he can of it. He does not mine for the sake of mining; he does not project operations for centuries or even, as a rule, for decades, as is the custom with certain government mining enterprises in Europe, where the main idea is permanency and steady employment. With us the whole spirit of mining is to treat the deposit as an exhaustible quantity, to extract it in the shortest reasonable time, and then to take up something else. And the net outcome, when the interest and running expenses are taken into account, is likely to be better, commercially, than under a slower policy.

At a silver mine where the ore was milled by wet crushing and simple pan amalgamation (a method adopted when the oxidized surface ores were being mined, but which was admittedly an inefficient process for the baser ores then being worked), a visitor once expressed surprise that they were satisfied with getting only from fifty to sixty per cent. of the assay. "But," mildly explained the superintendent, "the ore is the cheapest thing we have." It was true. The cost of salt and extra fuel, or of lixiviation chemicals, or of building a mill more suited to the ore, more than balanced the losses under the existing system of treatment. Why, it might be argued, should so much more attention be given to the ore than to the other material?

Or, take the case of a gravel mine worked by the hydraulic process. Just what proportion of the gold escapes can never be determined; but there is always some loss. By putting in a few more sluice boxes or an additional undercurrent a certain amount of gold and amalgam might be recovered which is allowed to run to waste. What the engineer aims at is to lengthen his line just to that point where it pays to do so, and no further. If he does not get all the gold, or a higher proportion of it, this cannot be helped. He does the best he can.

Now, without any spread-eagleism or needless boasting, it may be claimed that American practice in the mining and metallurgy of the precious metals is well in advance of foreign methods—and we think that the claim will be generally admitted. It is not merely, as it is occasionally stated, in originality and in daring enterprises that our engineers take the lead. They are also as thoroughly wide awake to the technical economies as to the commercial results. But they make a point of keeping the two distinct. When this guiding principle is once recognized, a juster estimate of their accomplishments can be had.

NEW PUBLICATIONS.

GIBB'S ROUTE AND REFERENCE BOOK OF THE UNITED STATES AND CANADA. Published by Gibb Bros. & Moran, New York, 1890. Flexible covers, 8vo, 251 pp., with 50 route maps. Price $5.

This is a guide for the use of commercial travelers. The maps show the principal railway connections, distances and fares. Tables are presented showing the number of firms of different classes in towns of 2,500 inhabitants or over. The book also gives lists of hotels in the principal towns, with their rates, but the selection of names is somewhat erratic.

STEEL SQUARES AND THEIR USES. Part II. By FRED. T. HODGSON. Published by the Industrial Publishing Company, New York, 1890. Cloth, 12mo., 80 pp., 65 diagrams. Price $1.

This little book decribes the use of steel squares in solving a number of mechanical problems in constructive carpentry, joinery, sheet metal work, etc. The author is the editor of the *Builder and Woodworker*. His first volume, on the same subject, is said to have had a sale of 150,000 copies, a very large edition for a book of the kind. This success has induced him o issue the present volume as Part II. It supplements the former work, and gives a number of ingenious wrinkles for laying off polygons of different numbers of sides, for working out various geometrical problems, and for fitting angular and splayed work. Many of the methods suggested are new to us, as doubtless they would be to artisans. The book contains much that is useful, but the descriptions of methods are not always clear, and the constant reiteration of self-laudation and advertising of Part I. are in poor taste and decidedly wearisome.

RAILROAD ENGINEERS' FIELD BOOK AND EXPLORERS' GUIDE. By H. C. GODWIN. Published by John Wiley & Sons, New York, 1890. Morocco, pocket style, 16mo., 358 pp.; 100 diagrams. Price, $2.50.

Mr. Godwin's idea in preparing this field-book seems to have been to get as much information as possible into compact and portable shape. The result is a work which is very handy for rough preliminary operations, but which will need to be supplemented by the larger treatises when it comes to making the final computations in office. For example, he omits the usual logarithmic tables, and thus saves a hundred pages or so of space. Speaking of his own experience, the author says that in railroad work for once that he uses logarithms he computes a hundred times by naturals, and this is doubtless common practice in reconnaissances and preliminary surveys, where very close work is not demanded. He suggests binding the mathematical tables in pocket-book form separately, for use in the tent or office. On the same principle he has cut down the mathematical demonstrations, and generally gives results rather than processes.

On the title-page the book is described as being especially adapted for the use of railroad engineers in location and construction. This is perhaps an overstatement of the scope of the work, which is better described in another clause of the title as being for use in making exploratory surveys. So far as it goes, this field-book appears to be valuable, though in the attempt to compress a great variety of matter into small compass, it is, as already hinted, unsatisfactory, and particularly so in the treatment of the subject of railroad construction, which is disposed of in 48 small pages. Still, as there is no railroad field-book nearly so portable, it will be appreciated for the special use for which it is designed.

The book is divided into four principal parts—I., dealing with railroad location; II., dealing with railroad construction; III., dealing with reconnaissance and exploratory surveys, and IV., giving various general information, mostly in tabular form. The apparent misplacing of Part III., which in natural order would come first, is explained by the author on the ground of its fuller treatment in comparison with the other topics. Indeed, this is the most useful portion of the book—probably because the author has here allowed himself more liberal space than in the other parts.

A COURSE IN DETERMINATIVE MINERALOGY. By JOHN EYERMAN. Published by the author, Easton, Pa., 1890. Paper, folio, vi. + 19 pp. Price, $1.

This new course in determinative mineralogy consists in a series of reaction schedules prefaced by brief explanatory notes. The principal reliance is, of course, the blowpipe, and the classification and arrangement is somewhat similar to those of Brush, though there are enough differences to authorize claims to originality. Whether the scheme of procedure is an improvement upon that commonly taught and practiced can only be demonstrated by actual use. The author teaches the student to place his principal dependence on chemical composition and to apply tests of physical characters afterward. This may be well enough in a course of study, but in practice would involve unnecessary work in all those cases where inspection, "hefting," simple tests with the knife, and observation of crystallographic form, etc., would suffice. The tests prescribed include, beside the regular blow-pipe routine, some tests by the wet method which would be inapplicable in field work, though useful in the laboratory. The large size of the sheets, which facilitates running down the schedules and is a good feature for use in the laboratory, would render the book inconvenient for the use of prospectors and engineers. The course includes only minerals of economic value and a few of the common gangue minerals. This simplification is to be commended on some grounds, and the scope is amply wide enough for the brief course of instruction pursued by academic students; but for technical schools it is not enough. Besides, where a text book of determinative mineralogy is to be constantly referred to in actual practice, it is much more satisfactory to have a guide for determining all minerals, useful or otherwise, than merely a few of them. A positive determination of a specimen precludes doubt where the negative results obtained by going through a partial scheme might leave the question more or less unsettled. It is no harder to carry about and apply a complete manual than an abridged one; the difference simply consists in a little additional trouble in turning over the leaves which do not apply. Still, we have no doubt that the course outlined in this new method is amply sufficient for the purpose for which we suppose it was planned—the instruction of college students, who have time for only the briefest course in mineralogy. Professional students will need something fuller.

REFLECTIONS ON THE MOTIVE POWER OF HEAT AND ON MACHINES TO DEVELOP THAT POWER. Translated from the original French of N. L. S. CARNOT. Edited by Prof. R. H. THURSTON. Published by John Wiley & Sons, New York, 1890. Cloth, 12mo.; 200 pp.; with portrait of Carnot. Price, $2.

In a prefatory note by the publishers it is explained, with what might be termed shrewd naïvete, that the motive for this translation of Carnot's famous work is "not the usual one, either with the publishers or the editor—expectation of gain in either purse or fame. Neither could reasonably be anticipated from the reproduction of the work of an author of more than half a century ago, in a field then unrecognized, and to-day familiar to but few, and especially when, as in this case is the fact, the work itself has been long out of date as a scientific authority, even had it ever held such a position." The inference is that the publication is a labor of love, and that the researches of Carnot have at the present day neither a popular nor a scientific interest of moment, except in a purely historical way.

This position we think is unsound. The work of the pioneers of scientific progress does not become antiquated with time, though modifications must necessarily be often made. If this were so, the whole structure of science would rest on shifting quicksands instead of being laid on sure foundations, which every fresh acquisition of knowledge

adds to and does not detract from. It is true that physicists of to-day are far more advanced than was Carnot; but that does not mean that the principles of thermo-dynamics enunciated by him have been subverted. They have simply been built upon. In this respect Carnot occupies a position similar to that held by the other great leaders of the past. No one thinks of ignoring Faraday because since his time the inevitable march of progress has carried a host of lesser lights to more advanced stages.

But, even as a mere matter of historical interest, students will find much to admire and wonder at in the remarkable prescience shown by Carnot, in the pregnant hints of truths which subsequent and more methodical experimental research have confirmed, while such of his assumptions as were erroneous are readily eliminated. Professor Thurston brings this out very plainly in his notes.

The translation is preceded by a biographical sketch of Carnot by his brother, and the book is inscribed to his grand nephew, the President of the French Republic, who also, by the way, as an engineer has manifested the prevailing traits of the distinguished Carnot family. Following Carnot's essay is a (reprinted) chapter by Sir William Thomson on Carnot's theory of the motive power of heat, which, while thoroughly critical, estimates the value of the earlier researches at a high rank. The appendices contain extracts from unpublished writings of Carnot and the foot-notes to the original memoir.

The book is a graceful tribute to the memory of a man too little known, and will be appreciated as being the first English translation of Carnot's great memoir.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.]

Steel Squares and their Uses. By Fred T. Hodgson. Published by the Industrial Publication Company, New York. 1890. Pages 83. Price, $1.00. Illustrated.

Monograph XV., United States Geological Survey.—The Potomac or Younger Mesozoic Flora. By William Morris Fontaine. Government Printing Office, Washington. 1889. Cloth, 2 vols. (text and plates bound separately), 4to, 377 pp.; 180 pl. Price, $3.25.

Monograph XVI., United States Geological Survey.—The Paleozoic Fishes of North America. By John Strong Newberry. Government Printing Office, Washington. 1889. Cloth, 4to., 340 pp.; 53 pl. Price, $1.

Bulletin 54, United States Geological Survey—On the Thermo-Electric Measurement of High Temperatures. By Carl Barus. Government Printing Office, Washington, 1889. Paper, 8vo., 313 pp.; with diagrams. Price, 25 cents.

Bulletin 55, United States Geological Survey—Report of work done in the division of chemistry and physics, mainly during the fiscal year 1886-'87. F. W. Clarke, Chief Chemist, Government Printing Office, Washington, 1889. Paper, 8vo., 93 pp.; with diagrams. Price, 10 cents.

Bulletin 56, United States Geological Survey.—Fossil Wood and Lignite of the Potomac Formation. By Frank Hall Knowlton. Government Printing Office, Washington, 1889. Paper, 8vo.; 72 pp.; 7 pl. Price, 10 cents.

Bulletin 57, United States Geological Survey.—A Geological Reconnoissance in Southwestern Kansas. By Robert Hay. Government Printing Office, Washington, 1890. Paper, 8vo.; 49 pp.; with map and sections. Price, 5 cents.

Midnight Talks at the Club. By Amos K. Fiske. Published by Fords, Howard & Hurlbert, New York, 1890. Cloth, 16 mo., 298 pp. Price, $1.

Eighth Annual Report of the United States Geological Survey (fiscal year 1886-87). J. W. Powell, Director. Published by the Government, Washington, D. C., 1889. Cloth, 2 vols., 1,063 pp.; 76 pl. and maps.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Electric Hand-Lamps in Collieries.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In writing you of the Paris Congress of Mining and Metallurgy last fall I said that it was there stated that 500 electric hand-lamps were in actual use at the Risca colliery in Wales. Since then I learn from one of Her Majesty's inspectors of mines for Wales that these lamps are not now in use; they have been tried and abandoned. Yours, etc.,

HOOSICK FALLS, June 28. HENRY M. HOWE.

The Cook Amalgamator.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your issue of June 21st I notice an interesting and clearly illustrated description of the Coleman Separator, which is rechristened "The Cook Amalgamator." This machine was invented, and patented February 7th, 1871, by Chas. C. Coleman, of San Francisco, and was used in California, Nevada, and, I think, in Colorado.

Mr. Coleman described it as a sulphuret saver or concentrator and an amalgamator. His working machines were much longer and larger than the one decribed in your journal, but upon measuring a small one in my possession here I find "the cylinder is 30 inches long, with a diameter of 20 inches," which so exactly meets the JOURNAL's description as almost to suggest a copy; but my machine was sent from California several years since by Mr. Coleman, bears the marks of age, travel and use, and can mainly be distinguished from the Cook machine by being without an amalgamating-table attachment—that not being claimed by Coleman as his invention. I inclose an old cut of the Coleman machine in which the family resemblance to the Cook amalgamator, if not too close to be accidental, is certainly confusing, as the article in your journal, so far as it goes, very accurately describes in detail the main features of my illustration. It is unfortunate that Dr. Cook did not continue his investigations, as some valuable appliances belonging to the original machine seem to have escaped his attention, which in time he might have discovered and thus appropriated the entire Coleman invention.

ST. JOHNSBURY, Vt., June 30th. JOHN H. PADDOCK.

DRY SLIDE-VALVE AIR COMPRESSORS.

The ordinary feature in air compressors, that the compressed air expands with the piston on its return stroke, involves a loss of compressed air contained in the clearance spaces at the cylinder ends. Messrs. Burckhardt & Weiss, Sangerbund, Germany, have obviated this disadvantage by the patented contrivance of introducing into the slide-valve, Fig. 1 *b*, of the compressing cylinder a channel, Fig. 1 *d*, which, at the end of the stroke, effects a communication between the clearance space at that end of the stroke and the other part of the cylinder, thus permitting the compressed air in that space to expand into the other end of the cylinder. As the slide valve, supported by springs, Fig. 1 *c*, is rigidly connected with its motive parts, and directly operated in its travel from the crank shaft, it is but little subjected to wear, and not liable to jam, jar or clog. Fig. 2 shows the claimed comparative efficiency of this new design, and of a well-made compressor of the usual pattern, the vertical shading relating to the former, the horizontal to the latter.

The increase in efficiency is reported to be the difference between 93 per cent. and 74 per cent., or 19 per cent. at a 60 pounds pressure, by the augmentation of which the efficiency, of course, increases.

The advantage of the practical avoidance of the clearance space extends to the whole machine, as thereby the length of stroke is diminished and the dimensions generally reduced. The lessened friction, great piston speed and high number of revolutions result also in considerable economy in fuel.

In Fig. 1, *a* indicates the water jackets which have been substituted for the ordinary injection of water into the cylinder as spray, this being destructive to piston and valves. The extension of the cooling surface over the whole internal area of the cylinder is claimed to save, in machines of medium size, from 10 to 12 per cent. in power.

The alternating pressures in the cylinders bring into action the Weiss slight lubricators for piston and valve, delivering an exact and observable quantity of oil to the cylinder.

The automatic cut-off valve gear on the Rider system, with which the steam cylinders of these compressors are provided is operated by a governor which varies the point of cut-off from 0·02 to 0·7 of the piston stroke, so that varying quantities of air taken from the receiver, entail no loss of steam. By adjustment of the governor the engine speed can be changed 25 per cent.

The cylinders are fitted with nozzles for indicator gear, and all parts are designed for a pressure of 90 pounds per square inch.

The compressors are constructed as shown in Fig. 3. They are operated by steam cylinders, and are direct-acting without sling-guide.

The type illustrated in Fig. 4 is particularly adapted for driving rock drills in tunneling and mining, and for sinking foundations under water. The cranks are set at angles, so chosen as to distribute the strains on the crank-pin equally over the whole stroke, thus securing a great range of expansion in the steam cylinder, economy of steam, light flywheels and noiseless working.

The fundamental idea of avoiding the clearance space is applicable to various machineries for different purposes, among which we call attention to the dry vacuum pump, whose high efficiency and great speed are claimed to enable this design to reach any given capacity with smaller dimensions of the cylinders than otherwise is possible. The wet vacuum pumps which hitherto have been in common use for evaporation in vacuo, even with rather poor injection water, will probably soon be superseded by this formidable rival.

DARBY'S RECARBURIZING PROCESS.

Written for the Engineering and Mining Journal by Henry M. Howe at the Paris Metallurgical Congress.

The statement, which I recorded, that Darby makes 1,000 tons of filtered steel weekly, I am informed by an entirely trustworthy correspondent, is inaccurate; Darby could make 1,000 tons weekly of filtered steel, and may have made 1,000 tons in certain weeks; but, in fact, his orders are chiefly for classes of steel which do not need his filtering process, e. g., low-carbon steels.*

At Brymbo I learned the following particulars of Darby's process, which, as many of your readers know, consists in recarburizing molten steel by passing it through a layer of carbonaceous matter, actually lumps of gas-carbon, so as to avoid introducing silicon and manganese along with the carbon. Gas-carbon is preferred to other carbonaceous matter because dense, nearly free from sulphur, and readily absorbed by the molten steel. The molten metal is run through a perforated brick-lined vessel or filter, into which the gas-carbon is dropped from an overhead funnel little by little, as that in the vessel beneath it is dissolved by the molten metal. This is shown clearly in the accompanying illustration. Were the carbon added all at once, the first portions of steel would, it is thought, be over-carburized, the later ones under-carborized. Moreover, the steel would pass too slowly through a thick layer of carbon, and might even chill in it.

About 85 per cent. of the carbon added is accounted for by the increased carbon-content of the steel. The remaining 15 per cent. is in part blown away, in part burnt. No carbon is found in the filter after the steel has all run out. Indeed, in a heat which I saw tapped, the carbon had all been taken up when some two-thirds of the metal had run through the filter. This was then removed, and the rest of the steel ran straight from furnace to ladle. I was told that this was their usual practice.

Two questions about this method of recarburizing at once suggest themselves. But let me digress a moment to protest against misusing the word "recarbonize." To "carbonize" is to char, to render carbonaceous. To carburize is to make a carburet of, or to cause to unite with carbon. Just

*British Patent 418, January 10th, 1888.

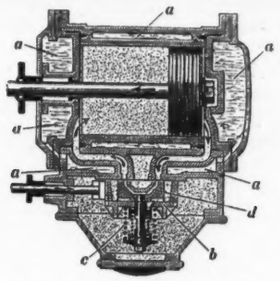


FIG. 1.—SECTION OF AIR CYLINDER.

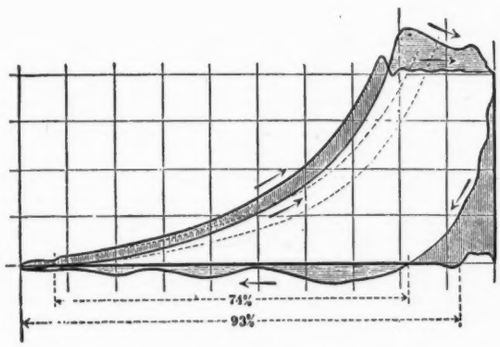


FIG. 2.—COMPARATIVE INDICATOR DIAGRAMS FROM ORDINARY AND DRY SLIDE VALVE AIR COMPRESSORS.

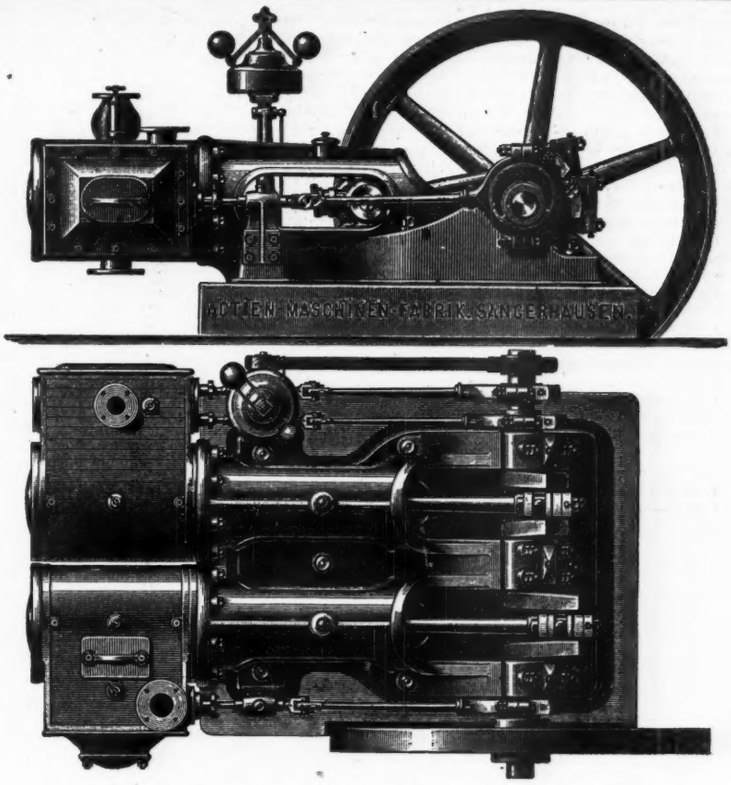


FIG. 4.—DOUBLE CRANK DRY SLIDE VALVE AIR COMPRESSOR.

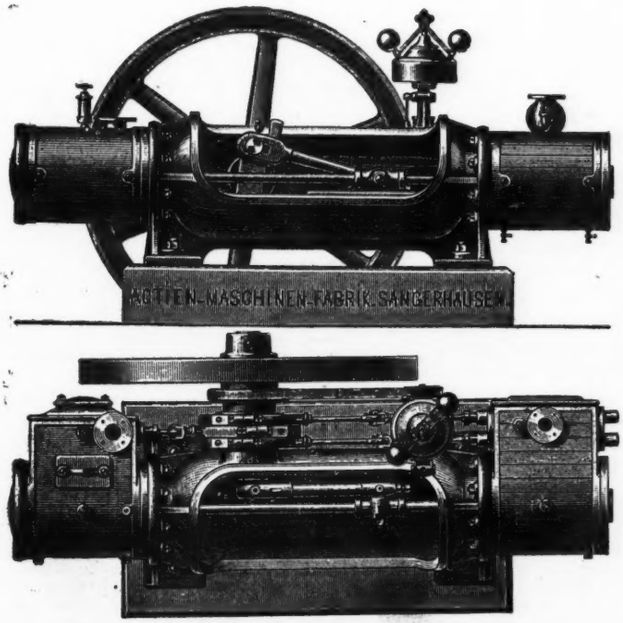


FIG. 3.—DIRECT-ACTING DRY SLIDE VALVE AIR COMPRESSOR.

as to oxidize is to make an oxide of. Hence to "recarbonize" should, by analogy, mean to again carbonize, to char or render carbonaceous again, which is not at all what we do when we cause steel to combine with carbon again, or recarburize.

The questions to which I refer are: How closely can we hit the desired degree of carburization, *i. e.*, How near will the actual carbon-content of the metal be to the carbon-content aimed at? and how much difference will there be between the carbon-content of different parts of the same charge? In brief, how accurately and how uniformly can we recarburize? In my Paris letter I stated that Mr. Darby informed me the carbon varied only about 0·025 per cent. on either side of the point aimed at. The uniformity is shown by the following sets of analyses. Each set of three represents three test-ingots taken from a single heat:

Percentage of carbon in eight sets, each consisting of three test-ingots, and each from a single heat of basic open-hearth steel.

	·58	·46	·82	·88	·55	·45	·43	·30
	·55	·43	·81	·91	·59	·45	·43	·32
	·57	·46	·80	·89	·52	·45	·40	·30
Variation..	·03	·03	·02	·03	·07	·00	·03	·02

In all but one of these cases the uniformity leaves nothing to be desired.

A more complete analysis of the last of the above steels gave the following interesting composition:

Carbon.	Silicon.	Phosphorus.	Manganese.	Sulphur.
0·31%	0·02	0·041	0·15	0·014

The proportion of manganese is strikingly low; yet the metal rolls well. Such steel as this passes Lloyd's boiler-steel test, its tensile strength lying between 26 and 30 tons (58,000 and 67,000 pounds) per square inch, and its elongation in eight inches exceeding 20 per cent.

On page 533 of your issue of May 10th, a correspondent proposes the theory that the carbon is not directly absorbed by the metal, but that the process is primarily a method for facilitating, by the mechanical agitation of filtering, the reaction

$$FeO + 3\,CO = FeC + 2\,CO_2;$$

and he thinks that filtering across an inert substance like chamotte might produce like, but apparently less marked, results. Furthermore, referring to my simile, that "the carbon dissolves in the molten steel like salt in water," he does not know how to dissolve carbon in that way. Now, two objects or operations may be much alike and yet differ essentially. A picture is like a man, brass like gold; a cloud very like a whale, a whale like a fish; yet in each case there is an essential difference. This is a literary, not a metallurgical point. Now that I have seen the process in operation, I see no reason to discard this simile, which was suggested to me by descriptions of it. The simile fulfills the object of language, conveying ideas without being liable to deceive any careful reader, or to be by him misunderstood, unless intentionally. Given as it was, in a condensed newspaper account of the proceedings of the congress, it does not even suggest an exact chemical correspondence between the mode in which carbon reacts on molten steel and that in which salt reacts on water.

I would not here pass judgment on your correspondent's theory, but I would be glad to learn how he would explain certain facts, which, at the first glance, seem to accord with it but poorly.

I. The intimate mechanical mixing of non-carbonaceous matter with molten or semi-molten iron does not seem to have the mechanical carburizing effect which he attributes to Darby's gas carbon. Witness the slag in the puddled ball, that formerly mixed with the molten ingot-iron at Avesta, the pouring of ingot-iron through a sieve of refractory material. In the first two cases, and I believe in the last, extraordinarily soft and tough metal, and metal extraordinarily free from carbon, may be made.

II. Let us start with ingot iron containing by the combustion method 0·10 per cent. of carbon. This method, mark well, gives the whole of the carbon present, both that existing as carbon, and that, if any, existing as carbonic oxide. In order to obtain ingots with 0·95 per cent. of carbon, or in other words to increase the carbon-content of this metal by 0·85 per cent., Darby exposes to it 1·00 per cent. of gas carbon. On your correspondent's theory, and by his reaction, for every part of carbon taken up by the metal three must be present as carbonic oxide, and two of these must be converted into carbonic acid, if indeed I understand him aright, and I am not sure that I do. Hence we must have at least $3 \times 0{\cdot}85 = 2{\cdot}55$ parts of carbon present, in one condition or another, while we only have evidence that $0{\cdot}10 + 1.00 = 1{\cdot}10$ per cent., or less than half of this quantity is present. Where is the rest to come from?

III. Again, the carbonic acid which should thus escape would correspond to that produced by the combustion of $2 \times 0{\cdot}85 = 1.7$ per cent. of

carbon; or, in case of a 20-ton charge, about one-third of a ton of carbon. The resulting reasonably pure carbonic oxide flame, diluted with little nitrogen, should escape from the filter and stream during the few minutes occupied by the passage of the steel. Now, I would like to know how it is that this occurs, and yet that, to the unaided eye, only a very moderate flame can be seen escaping, and that the funnel which hangs above the filter, far from being consumed by the enormous flame of carbonic acid which your correspondent's theory seems to call for, remains uninjured.

IV. Again, where is the oxygen to come from to form all this carbonic acid? To introduce 0·85 per cent. of carbon into the metal, as we have just seen, $3 \times 0{\cdot}85 = 2{\cdot}55$ parts of carbon must be present first and last as carbonic oxide. Let us generously suppose that the 0·10 per cent. of carbon initially in the metal existed as carbonic oxide. As no other carbonic oxide seems to be present, we must suppose that the rest of the gas comes from the oxidation of carbon. To form it we may suppose 2·45 per cent. of carbon burnt to carbonic oxide, and two-thirds of this latter to carbonic acid. To burn this percentage of carbon out of steel in the Bessemer process with a pair of gigantic blowing engines might well take five minutes, producing the enormous roaring flame, carbon-flame, so familiar to all. To burn 2·45 per cent. of carbon to carbonic oxide would call for about 3·27 per cent. of oxygen. Of this but a trifle can come from the metal: Let us be over generous and admit, to round our numbers, that 0.27 per cent. comes from the metal, and that 3 per cent. must be supplied by the air. This would call for some 13 per cent. of air, or, in case of a 20-ton charge, some 2·6 tons of air, or 5,824 pounds, or some 80,000 cubic feet, or as much as would be contained in a conduit 10 feet square and 800 feet long. Further, enough air must be present to burn two-thirds of this carbon beyond carbonic oxide to carbonic acid, so that our ten-foot conduit would really have to be some 1,300 feet, or about a quarter of a mile long.

Now, either I have misunderstood your correspondent, or else we are to suppose that this enormous volume of air is somehow or other to get access to the carbon which you see in the accompanying illustration apparently hermetically sealed, covered above by a bath of molten steel, beneath by the brick bottom of the filter and by the streamlets of metal running through its little holes; or, if not that, is to come into contact with the stream of metal flowing swiftly from furnace to ladle, and during the few minutes occupied by that passage. I can testify that no such hurricane as this would imply exists around the running metal.

Nor does it seem much easier to make your correspondent's theory explain Darby's carburization, by supposing that carbonic oxide simply *carries* carbon to the iron, somewhat as in carbon impregnation, and that the resulting carbonic acid, formed by the reaction given above, is immediately reduced to carbonic oxide again by the surrounding carbon or metallic iron, to again carry its carbon to the metal. For if, in spite of the ready permeability of the thin bars of iron in the white-hot cementing furnace, it takes some seven days of firing and ten of cooling to thoroughly carburize iron by cementation with a great excess of charcoal, is there time in the few seconds during which any given portion of the molten metal is in contact with carbon in Darby's filter for this roundabout series of reactions to occur to such an extent as to give the metal 1 per cent. of carbon, when but little excess is present?

We readily understand that such a series of reactions may cause the carburization in the cementing-furnace, for here the confined gases have ample time; and here the carbon cannot directly carburize the interior of the bars, with which it has no contact.

But in Darby's process the ready escape offered to any gas formed, the extremely brief time of contact, the accuracy with which the percentage of carbon which the metal will take up is foretold, the close correspondence between this percentage and the quantity of carbon to which the metal is exposed, one increasing in direct proportion with the other; the complete disappearance of the carbon; in short, the whole aspect of the case points to a most obvious conclusion, to-wit: that the iron combines directly with the carbon, rather than that the carburization occurs through the roundabout carrying action of the oxides of carbon, though this action, too, may occur to a limited extent. Why should we doubt that iron can combine directly, readily and quickly too, with carbon? Can we not case-harden in vacuo?

Indeed, the obvious explanation is often untrue. Realizing this, I put forward these objections, thinking that possibly your correspondent may have overlooked certain of them, and that they may influence his opinion, or else that he may show that the difficulty in reconciling his theory with the facts is only apparent, not real.

Death Rate in Austro-Hungarian Mines.—Official statistics of casualties in Austro-Hungarian mines show the miners to be exposed to a rate of fatal accident amounting to about 2 per 1,000 lives. For the years 1879-89 inclusive there were 1,838 deaths among miners averaging 82,312 per annum. The annual account is as follows:

Years.	Number of workmen.	Number of deaths.	Ratio lives lost to men employed.
1879	75,814	153	0·202
1880	77,953	142	0·182
1881	79,136	167	0·211
1882	80,901	144	0·178
1883	82,899	155	0 187
1884	84,954	177	0·208
1885	85,616	291	0·340
1886	83,807	141	0·168
1887	84,368	148	0·175
1888	85,012	153	0·180
1889	84,971	167	0·197
	905,431	1,838	
Annual average	82,312	167	0·203

This does not show a very heavy fatal accident liability as to the workers in the mines of Austria-Hungary. The rate of such liability among the general adult male population of Pennsylvania is about 1 per annum to every 750, that of the miners named being one to every 500; such Philadelphia probability being, therefore, two-thirds of that of the Austro-Hungarian mines.

IMPORTANT IMPROVEMENTS IN SUGAR MACHINERY.

RESULTS OF THE UNITED STATES GOVERNMENT SUGAR EXPERIMENTS.

In 1885 the United States Department of Agriculture, under direction of the chief chemist, Dr. H. W. Wiley, began a series of experiments in the manufacture of sugar from sorghum cane. The main idea was to adapt the diffusion process which had been so successfully applied to sugar beets in Europe to the working of cane.

In order to make these experiments on such a scale as to be of practical value, this work was undertaken in conjunction with the large sugar works at Fort Scott, Kan. The first machinery was either imported from Germany or built from European plans, but it was found that, owing to the fibrous nature of the cane, neither the cutting machinery nor the diffusion batteries would work successfully.

It was also found necessary, in order to compensate for the additional water added to the juice by the diffusion process, to provide evaporating appliances that would not only be more economical, but also of correspondingly greater capacity than what was hitherto used with the more concentrated mill juice from the rolls.

The results of these experiments proved very successful, and attracted a large number of people who were interested in the sugar industry. France, Germany, Austria, Algiers and Chili sent representatives, and delegates from a number of Sugar Planters' Associations were present during the progress of these experiments.

It was singularly fortunate that these sugar works were built adjoining the extensive works of the Fort Scott Foundry and Machine Works Company, whose management had an extensive experience in the field of practical sugar making, and the improvements brought out by that enterprising company during the last few years may justly be said to be the beginning of a new epoch in the history of sugar production in this country.

A series of attempts had heretofore been made to introduce diffusion in Louisiana, but all failed, owing to the difficulty of reducing the cane to a sufficiently fine condition to effect a good extraction of the sugar.

The cutters built by the German manufacturers that worked well on beets were found to have but a fraction of the same capacity when applied to cane, and the knives were constantly clogging, owing to the tough fiber of the cane. Moreover, they had to be fed by hand, making the operation very laborious and expensive.

The cutting machinery built by the Fort Scott Foundry and Machine Works Company overcomes all these difficulties. All that has to be done is to place the cane on an endless carrier, and the fine cane chips are delivered into the cells of the diffusion battery without any further manual labor. Moreover, the capacity of these cutting machines is almost unlimited, a number having been built with a capacity of 500 tons of cane per day.

One of the most important features is the multiple safety-dead knife, which is so arranged that it will at once yield and let through any hard substance like iron without any injury to the cutter. Last year all other cutting devices were abandoned, and the above-described cutters are now used in every sugar factory in this country where diffusion has been adopted.

The diffusion batteries have also been greatly improved by these manufacturers. One of the most important of their improvements being the working of the heavy doors by the use of hydraulic cylinders, this work having previously been done by manual labor.

A more recent improvement, but of still greater importance, is their new heating arrangement, by which the heat in the battery can be kept up independent of the circulation, and by the aid of which the juice in the battery may be kept above the temperature where fermentation can take place, if for any reason the work should be suspended for a few hours.

In the field of evaporation the Fort Scott Foundry has also produced much higher results, and the apparatus it manufactures for this purpose is radically different from that which has been commonly in use, and has shown a degree of economy and efficiency not heretofore attained by any evaporating device.

In the so-called standard double or triple effect evaporators, the heating surface is similar to a vertical tubular boiler, the liquid to be evaporated being on the inside of the tubes. This necessitates a deep body of liquor being from four to eight feet deep; and the liquid being confined inside the tubes, the vapor meets with a great deal of resistance. Moreover, the lime which had been used for clarifying the juice produces a deposit on the inside of the heating tubes, where it adheres very firmly and causes much trouble and loss of heat and capacity.

In the apparatus manufactured by the Fort Scott Foundry and Machine Works Company this construction has been reversed. The heating tubes are horizontal. The evaporation takes place from the outside of the tubes, causing any deposit to be easily detached. The heating tubes are inserted in such a manner that they can easily be removed, all joints being made by a very effective packing device. The heating surface can also be readily cleaned on both sides, and thus the deposit caused by lubricating oils from exhaust steam can be removed, which otherwise soon reduces the efficiency of an apparatus.

Another very important feature in the construction is that the apparatus can at any time be enlarged to any desired capacity by simply adding more shelves, and no change in foundations or in the original plan is necessary.

In evaporating appliances that produce the evaporation by causing the liquid to be evaporated to pass through a series of tubes in the form of spray, or run down the inside or outside of the tubes in a thin film, great loss is occasioned by the small particles of juice becoming entangled with the escaping vapor and loss of sugar and discoloration takes place owing to parts of the heating surface being at times bare. The heating tubes we are describing being entirely submerged in the apparatus, these troubles are entirely overcome, while the great efficiency due to shallow evaporation is retained. The liquid to be evaporated is only four inches deep, and this depth of liquor is regulated automatically so as to be just deep enough to cover the tubes.

The heating surface is also divided into compartments, which gives the apparatus a large evaporating surface. This, together with the shallow evaporation, gives a very high efficiency, and the amount of water evaporated per square foot of heating surface is nearly four times greater

than the best results obtained with the vertical tube apparatus. The flow of liquor through the apparatus is continuous, so that liquor flows in at one end of the apparatus and out at the other at any desired density.

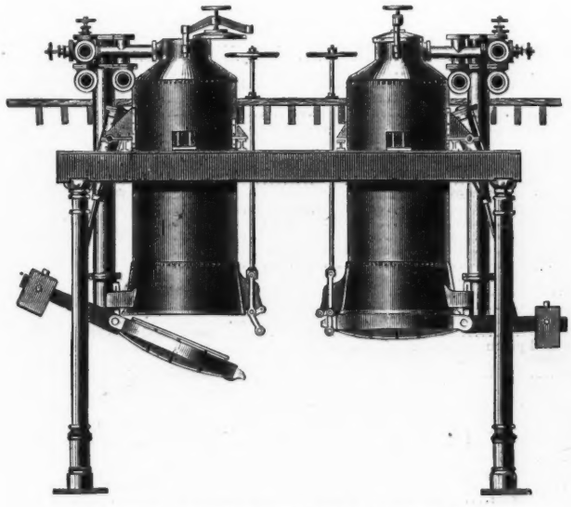
This evaporating apparatus is made to work from a single to a quadruple effect, and has been adapted to the evaporation of all classes of liquors, more especially for the evaporation of cane or beet juice, glucose liquors, packing house tankage, and tan bark extracts. The firm has also modified the apparatus so as to make it perfectly adapted to the manufacture of salt, and the fuel necessary to produce the salt has been reduced 75 per cent. as compared with what is used by the open pan process, and the manual labor has been reduced almost in the same proportion.

The salt produced is also of very superior quality. Instead of flat scale-like crystals produced in the open pans, the crystals are regular and uniform, and of much greater purity, and the most superior table and dairy salt is produced without any grinding, screening or other subsequent operation.

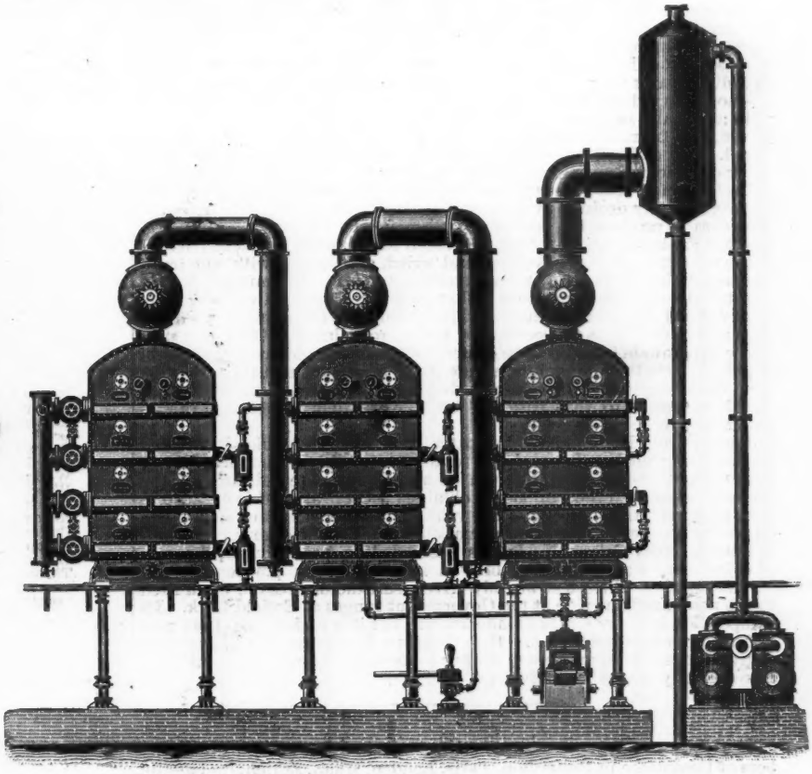
The great merit of this evaporating apparatus is shown by the fact that three-fourths of all the contracts made in Louisiana this year for multiple effects have been awarded to the Fort Scott Foundry and Machine Works Company.

One triple effect which the company is now building for the Caffrey Central Sugar Refinery at Franklin, La., will be the largest evaporating apparatus in the United States. It will evaporate one million pounds of water per day, and is guaranteed to evaporate three pounds of water for every pound of steam delivered from the steam boilers into the apparatus.

By the use of an apparatus consisting of six effects, it is claimed to be possible to evaporate six pounds of water for each pound of steam introduced into the apparatus, this being rendered feasible by the very shallow evaporation and large evaporating surface, and it is said that this claim is fully sustained by the performance of their evaporators erected on several plantations last year.



THE TWO OPPOSITE CELLS OF A DOUBLE LINE DIFFUSION BATTERY.



TRIPLE EFFECT EVAPORATING APPARATUS.

Waste Acids from Galvanizing Works.—All who are engaged in the iron trade are aware how difficult it is for the manufacturers of galvanized iron to deal with the spent acids to be got rid of during the process. In various parts of England this difficulty has brought manufacturers of galvanized iron into collision with the local authorities in connection with the contamination of streams and rivers. Of interest, therefore, is the result of experiments which have for some months past been carried on by Mr. Thomas Turner, lecturer on metallurgy at Mason College, Birmingham. There are several systems in use at present, one of the best of which is the lime-purifying system. Under Mr. Turner's new process the waste liquor is merely boiled down to dryness and the solid residue heated to low redness. Oxide of iron remains in the furnace, while free hydrochloric acid distils off, is condensed, and can be used over and over again. The new process requires no chemical agents, by its use nothing whatever is thrown away, no nuisance is made, and a clear profit realized. As a result of experience it is found that the furnaces will work three months without stoppage, that they use only 4 cwt. of fuel to treat completely a ton of waste liquor, and that the oxide of iron recovered has a value which goes a long way toward paying for the fuel used. The experiments have been conducted at the works of Messrs. Walker Bros., of Walsall and Netherton, in Staffordshire.

THE SMOKELESS GUNPOWDERS.

The secrecy of manufacture of smokeless powders by the different European government officials has given an unusual interest to the various patents relating to this subject, and it will be in the recollection of our readers that Sir Frederick Abel, in his recent lecture on "Smokeless Explosives" at the Royal Institution, pointed out that the question of the ultimate adoption of smokeless powders for military and naval purposes was only a matter of time. The so-called "amide powder," formed from a mixture of potassium and ammonium nitrates, was at one time the most important of these new explosives. Unfortunately, it was found to deteriorate when stored in a confined space, and hence a new material was desired. The French produced a powder for their Lebel rifle which contained picric acid, and last year it was believed that the manufacture of this explosive in France would confer a considerable benefit on the manufacturers of picric acid, as this material had hitherto few commercial applications. At present the smokeless powders which give the best results are those obtained from different nitro-celluloses or modifications of gun-cotton. Nobel obtained from gun-cotton by dissolving it in nitro-glycerine a powder which was both smokeless and unaffected by water; but as this explosive gives no solid products when detonated, there seems to be a difficulty in using it for the purpose for which it was devised, since no lubricant is produced in the bore of the gun to reduce the friction of the metal on metal. The composition of this Nobel powder is as follows:

Nitro-glycerine	100
Nitro-cellulose	50-200
Camphor	10-25

The camphor is first dissolved in the nitro-glycerine, and then, after the addition of 200 to 400 parts of benzine or amyl acetate, the nitro-cellulose is stirred into the solution. On evaporating the benzine at a temperature of 50 to 60 degrees C., the explosive is left in a gelatinous sheet, which can subsequently be cut into small cubes. As camphor is a very volatile body, the explosive made in this way is not of uniform composition; and more recently M. Nobel has proposed a mixture of 50 parts nitro-glycerine with 50 parts of dinitro-cellulose, the latter being made to dissolve in the former by means of benzine. He claims for this modification of his original powder that it is of uniform composition and permanent in moist air. The Nobel powder is of a brown color, and is one of the smokeless explosives which have recently been experimented upon by the German government.

The French smokeless powder already alluded to is known under the name of "poudre vieille," and has been in use in the French army since 1887, but the secret of its composition has been so well guarded that no other government has been able to produce a similar powder. It possesses many good qualities, and has been kept for a considerable length of time without undergoing any deterioration.

In Belgium the powder manufactory of Wetteren has produced a smokeless powder by dissolving nitro-cellulose and barium nitrate in amyl acetate. It is known as "No. 32," and is sent into the market in thin sheets resembling brown paper. The Austrian firm of Wolf & Co. has also introduced one of these new explosives. Their compound consists of gun-cotton which has been partially dissolved in acetic ether or

nitro-benzine, and subsequently dried by driving off the solvent at a low temperature. In this way each particle of gun-cotton is coated with a glazed surface, which retards its decomposition and renders it available for use in firearms.

Maxim has also patented a modification of gun-cotton, which is obtained by first saturating the cotton with acetic ether vapor, when it can be compressed into any desired shape, and subsequently obtained in granules or powder by gently evaporating off the solvent.

The well-known Hengst powder is obtained by nitrating straw, and then digesting the nitro-cellulose so formed in a hot bath of the following composition: Water, 1,000; saltpetre, 12·5; potassium chlorate, 3·125; zinc sulphate, 12·5; potassium permanganate, 12·5. After this treatment for some hours the material apparently absorbs some of the salts present in the water, and, when dried by pressure, can be obtained in the form of a fine powder. In an amended patent of last December the patentee has made some slight alterations in the method of manufacture. In America, gellite, or emmensite, so called from Dr. Emmens, of New York, is now being experimented with. It is a nitro-cellulose, saturated with ammonium picrate, and was first introduced to the American market in 1888. The nitro-cellulose used in its manufacture is prepared from paper, care being taken that the nitro product does not contain any trace of free nitric acid. It is then warmed with picric acid, and a current of ammonia gas passed through the liquid to convert the acid into the ammonium salt. Other powders of lesser importance containing nitro-cellulose have been patented by Turpin in 1888 and Gaens in 1889. The Gaens powder is being manufactured at Hamburg; it has the following composition: Nitro-cellulose, 25; potassium nitrate, 60; ammonium ulmate, 15.

This mixture is dissolved in acetic ether, and the mass compressed and granulated; it is then carefully dried. The ammonium ulmate, which is the novel ingredient in this formula, is obtained by digesting peat or turf with ammonia; the ulmic acid present in the vegetable mold is thus dissolved, and from the solution so obtained the ammonium ulmate is prepared. It is difficult to see what especial virtue this material has over other organic acids of more definite constitution.

In England, although apparently the official experiments have not been sufficiently decisive to warrant a new departure of any magnitude, considerable progress has been made. Among the earlier patents we find that Sir Frederick Abel, in 1886, laid claim to a smokeless explosive consisting of nitro-cellulose powdered and dried, and mixed with one-tenth to one-half its weight of dried ammonium nitrate. The mixture is then moistened with petroleum ether and moulded into small cubes, which are finally dried by gentle heating. The powder is then treated with a solvent which attacks the surface of the nitro-cellulose. On again drying, each granule is found to be coated with a superficial layer of varnish, which protects the ammonium nitrate from absorbing moisture from the air. Sir Frederick Abel has also produced an explosive named "cordite," which is similar to that patented by M. Nobel, but is obtained in filaments of a light brown color.

Johnston and Borland have also patented an explosive which is obtained by dissolving nitro-cellulose in a solution containing camphor. After gentle heating the solvent is driven off and an intimate mixture of the nitro-cellulose with the camphor is obtained. On heating this mixture in a closed vessel, the camphor, being volatile, produces a sort of glazed film on the surface, which renders the mass hard and suitable for use.

More recently Colonel Noble has succeeded in producing at the gun powder factory at Waltham Abbey a new smokeless powder, termed "Walthamite," which has already given satisfactory results when fired in the new magazine rifle at the Government ranges at Enfield Lock. Its composition is at present not made known, but it is understood that peat is used in its manufacture, and that therefore it may contain as one of its ingredients ammonium ulmate similar to the Gaens powder, to which we have already alluded.—*Industries.*

The German Government intends to establish in the near future Chambers of Commerce in Rotterdam, Paris, London, Milan, Zurich, Budapesth, Odessa, Riga and, eventually, in Salonica and New York.

Car Ventilators.—The French Orleans Railroad Company has introduced the Pignatelli ventilation apparatus on 25 cars used in express trains. The intention is to avoid the cinders, dirt and bad odors which inevitably accompany window ventilation. In the roof of the car is inserted a bent tube, the opening of which faces the front part of the train. The air forces itself through this tube into a small reservoir of water, where it deposits dust, carbon, etc. Then it travels through a metallic filter, constantly kept moist, and reaches at last the ceiling of the car, where its entrance is regulated at will. The apparatus uses per 1,000 kilometers about 25 litres of water, the evaporation of which keeps the temperature inside the car three degrees C. below that outside.

Meteorites in Iowa.—The large brilliant meteor which fell in Northern Iowa on the afternoon of May 2d, at 5.30, was widely observed throughout the adjoining country. It was in the nature of a meteoric shower; several complete meteorites, weighing from 10 to 100 pounds each, and a number of smaller ones, have been found at long distances from one another. This luminous ball was bright even in full sunlight; its comet-like tail was three to four degrees in length, and a train of smoke lingering behind it fully ten minutes marked its course in the sky. It appeared to enter the atmosphere a few degrees below the zenith, and to pass below the horizon to the N. N. W., descending at an angle of 50 degrees. The meteoric shower covered some two or three miles near Forest City, Winnebago County, while one meteor weighing more than 100 pounds passed into Kossuth County. Messrs. Joseph Torrey, Jr., and Erwin H. Barbour secured several fragments broken from the 70-pound mass, together with a complete and characteristic meteorite weighing one-fifth pound. They belong to the "stone" class. Their most noticeable feature is the large amount of iron contained in them, amounting to 45 per cent. by weight. The metal is in exceedingly small globules, and their flakes difficult to separate from its matrix, of which an analysis gives SiO_2 47·03, Fe_2O_3 29·43, Al_2O_3 2·94, CaO 17·5, MgO 2·96 = 99·94. Specific gravity of matrix 2·63, of the metal freed from matrix 5·75.—*American Journal of Science,*

WHAT COLOMBIA TAKES FROM THE UNITED STATES.

The Republic of Colombia is one of the nearest and most accessible of our South American sister republics. But the neighborhood and accessibility do not appear to assist to any considerable degree the introduction of American merchandise into that country. The latest statistics show that England has 45.2 per cent. of her trade, France 19.1 per cent., Germany 11.4 per cent., and the United States only 10.1 per cent. Last year, to which the above percentages apply, was the first occasion on which Germany caught up with and passed this country in her mercantile competition. The activity of the Germans in Colombia is noteworthy. They are sending out agents representing every industry and using all means to secure trade. This is especially the case in iron and steel products. As this country has at present control of more than half the supply to Colombia of iron and steel and machinery (all kinds included), the special movement of Germany in this direction deserves attention. The history of the German export trade, so far, is one of steady, if slow, advance. What trade she secures she keeps, and is always on the alert to increase. Any further gain by Germany will probably represent a larger loss to our trade than to English, because what Germany gains must be on account of low prices, and England can compete with her in this respect.

The above figures are furnished by Minister Egan at Santiago. He has availed himself of every document and record in compiling them. The Department of State, however, taking the official English, French and American returns, modifies materially the figures showing an ascendency of the English trade.

At present the imports of Colombia amount to $10,280,000 a year, which is $1,265,000 more than her exports.

The following table will show to the various branches of trade concerned what Colombia buys from the United States.

Articles.	American percentage of imports of each article.
Candles	8
Kerosene	99
Matches	34
Flour	93
Lard	95
Rice	9
Sugar	82
Paints, etc.	59
Bottles	15
Crockeryware	less than 1
Tools of all kinds	30
Machinery (except sewing machines)	68
Sewing machines	85
Nails and tacks	9
Wire fence	67
Boots and shoes	3
Leather	3
Beer	17
Wines	practically none
Mining supplies	32
Railroad supplies (including rails)	55
Lead	practically none
Resin, tar and pitch	97
Printing paper	13
Wall paper	practically none
Wrapping paper	45
Writing paper	16
Ready made clothing	10
Cotton goods	1.7
Hempen goods	practically none
Linens	none
Thread	practically none
Woolens	practically none
Construction woods	75

IMPROVEMENTS IN WINDING MACHINERY.

Among the different systems for operating endless cables or ropes, we call our readers' attention to Walker's patent differential drums, with loose rings for differential adjustment for saving ropes, power and machinery. This device is patented in the United States, Canada, Great Britain, Germany and Belgium. The drum is shown in Fig. 1 in section,

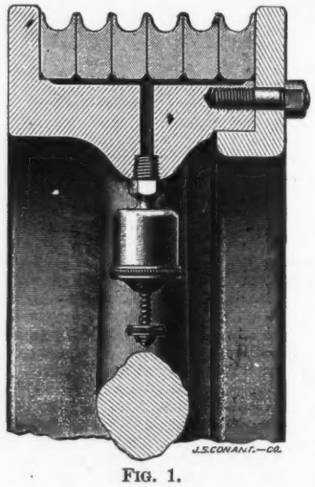


FIG. 1.

so as to illustrate the loose differential rings on which the rope rests while in operation. It has long been known that the destruction to ropes has been largely due to the grooves wearing irregularly in the solid drums, due to the severe strains to which the first groove on the receiving drum is subjected as a result of varying loads. The wear is very excessive on the first groove in comparison with the others in the old-style drum, wherein the grooves would be turned right into the solid face of the drum.

It is quite evident that after the wear progressed to such an extent as

to make a very great difference between the circumference of this first groove and that of the others, this would necessarily require either the rope to stretch a given amount in each revolution of the drum, equal to the difference in circumference of the smaller and larger grooves, or that slippage takes place in the groove, either of which would be very detrimental, both to the drum and to the rope. The differential drum removes entirely any wear of the grooves, or any wear of the rope while on the grooves. The rope enters on the first ring on one drum and is wound on to the corresponding ring on the second drum and then back to the second ring on the first drum, and so forth, putting on as many wraps as may be deemed necessary, according to the length of the rope. It will be seen that all the rings in the drum are loose. Now should there be any inequality in the diameter of the rings, whether in first construction or by subsequent wear in use, the rings will adjust themselves while the drum is in motion so that there can be no undue strain on any of the wraps on the drum. The rings on which the rope rests move slightly back or forth to suit the irregularities spoken of. A rope is hauled on the drum under very varying loads according to the resistance or number of cars and amount of traffic on the road; from this it will be understood that the rope is wound on the drums tight or slack according to the variation of load. While the rope is passing around the drums the tendency is for it to adjust itself or equalize the strains, which cannot be done on a solid groove drum without the rope slipping in the grooves; such slippage will wear the grooves and the rope also; but in the differential drums the rings being loose, they will allow the rope to become compensated through the movement of the rings, thus avoiding all undue strains. When the rope is at work on these differential drums, the impression of the rope is left in the tar at the bottom of the rings, which shows conclusively that there is no slipping of the rope in the rings. These rings have a diametrical friction, due to the pressure of the rope in the grooves transferred to the flat surface of the drum or to the inner side of the rings. The combined diametrical friction of the various loose rings is sufficient to drive the cable. Each individual wrap will move an individual ring with about one-fortieth of the strength of the rope, thus the compensation is thoroughly accomplished without any undue strain on the rope while passing over the drums. The bottom and sides of the rings are thoroughly lubricated by automatic grease-cups inserted in the rim of the drums. These differential drums have been thoroughly tested by the Twelfth Street Cable Railroad Company, Eighteenth Street Cable Railway Company and Union Railway Company, of Kansas City, Mo., the St. Louis Cable & Western Railway Company and Citizens' Railway Company, of St. Louis, Mo., and many others. To give a better understanding of the sectional drum cut we refer to our illustration, showing continuous driving machinery with two 14-feet and two 16-feet diameter differential drums in operation at the St. Louis Cable & Western Railway Company, St. Louis, Mo.; each of these drums has six differential rings, and the road is running to the best satisfaction with three wraps only, whereas the solid groove drums in the old plant required five and six wraps, thus showing the amount of power saved. The manufacturers of these drums also issue a printed list of tests of comparison of duty, &c., between solid groove drums and differential groove drums.

It will be noticed from the engraving that two cables are driven from this plant. Of these the one on the east division of the road is 27,000 feet long, one and five-sixteenths inches in diameter, while the cable on the west division is 9,000 feet long, by one and one-quarter inch in diameter. The main shaft is 14½ feet long by 18 inches diameter between journals. The journals are bored 16-inch holes by 30 inches long. The fly wheel, which weighs 53½ tons, is 20 feet in diameter, and the face of rim is 18 × 23½ inches deep. There is a steam jack and brake combined for checking the speed of the fly wheel when it is necessary for any cause to stop the cable quickly, and it is also used to pry the fly-wheel around to get the engines off center, or to make a short movement of cable when splicing or for any other purpose. The pinion on main shaft is 6 feet diameter × 22 inch face. The main gear is 18 feet diameter by 22 inch face and weighs 23 tons.

The drum gears are 11 feet diameter by 14 inches face, with pinions 5 feet diameter. The drums for driving the east cable are 14 feet diameter, and the cable makes three wraps; the speed of same is 8¼ miles per hour. The drums for the west cable are 16 feet diameter; this cable makes two wraps, and its speed is 9¼ miles per hour. The outside bearings of the drums are connected with the Walker adjustable strut. As will be seen in the cut, these struts are divided in the middle, and connected at that point with a large screw having right and left hand threads, which, being turned one way or the other, lengthens or shortens the strut, as may be found necessary.

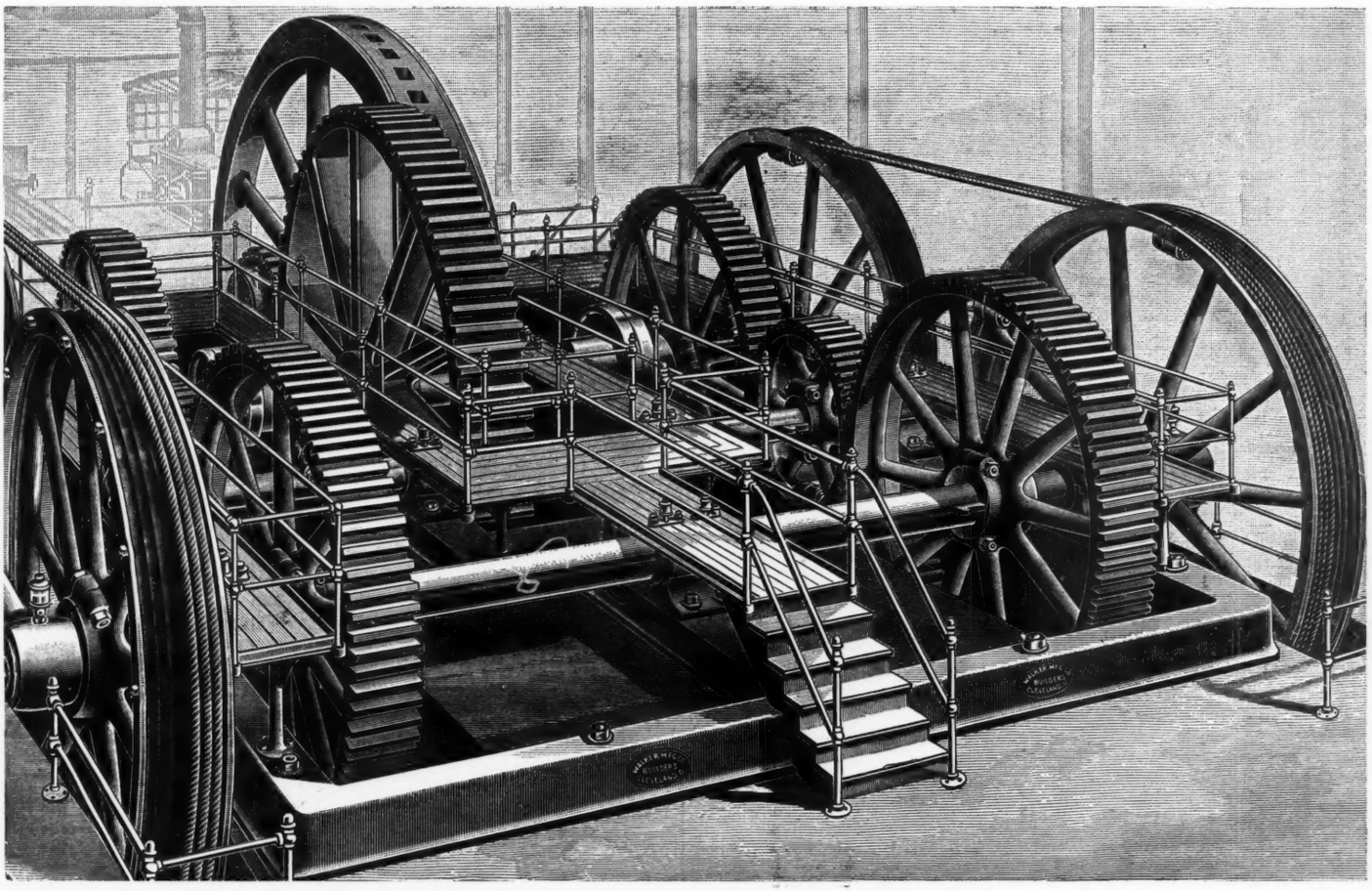


FIG. 2. CABLE RAILWAY WINDING PLANT AT ST. LOUIS, MO.

Power for this machinery is furnished by two Corliss engines of 850 H. P. each, having cylinders 30¼ inches in diameter with a 72-inch stroke and a speed of 50 revolutions per minute; only one engine at a time, however, is required to operate the road, the other being in reserve. This plant is manufactured by the Walker Manufacturing Company, of Cleveland, Ohio.

The Panama Canal.—A cablegram from Paris, France, dated the 2d inst., says that the commission sent by the government to Panama to investigate the condition of the canal has issued a further report dealing with the defects and omissions of the four plans proposed for the completion of the canal. According to the first of these plans the canal is to be isolated, no use being made of the existing waterways. The second plan proposes to make use of such waterways. The third provides for a ship railway, a sa portion of the proposed inter-oceanic route and the fourth for a tunnel through the highland at Culebra.

GEMS AND PRECIOUS STONES.

The *Mail and Express* of New York in a recent issue says: "Mr. George Frederick Kunz has treated an attractive subject in his handsome volume, 'Gems and Precious Stones of North America,' published by the Scientific Publishing Company, and one on which information will be welcomed by widely different classes of persons. It is a subject, moreover, on which there exists a good deal of popular misinformation. What is a precious stone? Strictly speaking, Mr. Kunz tells us, the only precious stones are the diamond, the ruby, the sapphire and the emerald, although the term is often applied to the opal, notwithstanding its lack of the essensial quality of hardness, and also to the pearl, which is not a mineral, but an animal product. Popularly, a gem is a precious or semi-precious stone, especially when cut or polished for ornamental purposes.

"The information furnished by Mr. Kunz's volume respecting the gem minerals of the United States will surprise a good many readers, and has a practical value for the miner, the prospector, and for all persons who are likely to meet with valuable stones or be deceived by imitations and misnamed specimens.

"The colored plates which illustrate some of the rare and beautiful specimens of American gems that are described in his pages are reproductions by Messrs. Prang & Co. of drawings made from the stones and are in the highest style of the art. The volume is beautifully printed and tastefully bound."

The *Engineering News* of New York in its issue of June 21st, says: "'Gems and Precious Stones of North America.' By George Frederick Kunz. The Scientific Publishing Company, Publisher. Royal octavo, 336 pp., eight colored plates and many minor engravings. This is a superb work that is justly attracting much attention at home and abroad, from the value and interest of its contents, the well-earned reputation of its author, and from the typographical excellence of its text and illustrations. The manner of treatment is such that while very much technical information of value is given regarding the location, the appearance and composition of the gems, this more useful material is most pleasingly set in other information, and makes it read like a story. It is everything but the dull text-book it might have been made had it fallen into the hands of a less sympathetic man than Mr. Kunz, or one less broadly informed on all that is properly included under the subject treated.

"As the work is confined to the gems of North America, it may surprise some of its readers to find that diamonds are included in this area, and take up in their description the first chapter of 40 pages in this work. They occur, so far, in only two geographically remote and geologically dissimilar regions. The first is a belt of country lying along the Eastern slope of the southern Alleghenies, from Virginia to Georgia; the other extends along the western base of the Sierra Nevada and Cascade mountains, in Northern California and Southern Oregon. In the first case the rocks in which they occur belong to the Archean and Cambrian ages, and in the second case in the middle or later Mesozoic. The diamonds have been found in loose material associated with garnets, zircons, iron sand and particularly gold. The diamonds so far found have little more than local interest and moderate value, and Mr. Kunz does not think that diamond mining will ever rank as an important industry. The so-called Dewey diamond is the largest, found at Winchester, Va., in 1855, and after passing through various hands, was cut and valued at $6,000. Mr. Kunz says it was reduced from 23¾ to 11 11-16 carats by cutting, is off-color and imperfect, and is probably worth $400. Mr. Kunz continues with a detailed account of the finding of other diamonds, with many interesting circumstances connected with their discovery, concluding with an account of the celebrated Arizona 'diamond swindle' of 1870.

"Other chapters treat in an equally interesting manner of the sapphire, ruby, topaz, emerald, turquoise, garnet, beryl, etc. The wood agates and wood opals of Colorado and California furnish a topic of peculiar interest, with tree trunks 150 feet or more in length transformed into chalcedony with its glorious colors. In one case a tree of agatized wood bridges a cañon 45 feet in width. The pearl fisheries of California and Mexico also make delightful reading. A New Jersey pearl found in 1857 was sold by Tiffany & Co. to the Empress Eugenie for $2,500, and to-day is worth $10,000. The final chapter is on the gems of Mexico and Central America, with special reference to the jade, obsidian and rock crystal implements and ornaments of the old Indian races of this section. Mr. Kunz says that the word jade is evidently a corruption of *ijada*, and the mineral was brought from Peru and Mexico under the name of *piedra de ijada*, or 'stone of the loins,' in allusion to its supposed curative properties in diseases of the loins and kidneys."

SAMPLE HOUSES ABROAD.

The great German sample ship which is to touch at all the chief ports of the world in the interests of German commerce has not so far put in an appearance in New York waters. It is stated in the most positive manner, however, that she will call here on her way to South America. She will contain samples of the leading German products which find a sale abroad, and more than that, it is promised that some of the commercial representatives, or maritime "drummers" on board will try to undersell us with "American" goods in the United States. These so-called American goods consist chiefly of manufactures of iron and steel. The stove manufacturers of Mannheim have gone into stove making on an extensive scale, and, having flooded their own markets with "real American" stoves, intend now to dispose of their surplus here and in South America at prices which will defy competition. The usual adjuncts of country-fair and latter-day cheap auction sales in the shape of military bands, banquets, balls, etc., at every port will be availed of to induce North and South Americans to visit the new maritime bazar.

What the Germans are going to attempt in one direction a number of American houses have determined to try in another. A movement is now on foot, which has for its object the establishment of a great United States sample house in each of the commercial centers of South America. To these sample houses our manufacturers and traders may send samples of their products and have them placed on the markets in an intelligent manner by representatives who are familiar with the language, local requirements, and customs.

We learn that a representative of the house of T. G. Pierra & Co., of Buenos Ayres, has been in New York for some weeks working on this basis. The firm undertakes to devote a fine building to the exhibition of samples and sale of American merchandise. A number of firms has already signed contracts and paid their quota toward establishing the concern; when it is established, there is little doubt that it will be the means of considerably increasing the volume of trade between this country and Buenos Ayres.

The new movement seems to be good, and one which must prove of advantage to those who have the necessary enterprise to risk a moderate sum of money to secure a new market. If it is followed up by a keen competition, moderate expectation, and no over-anxiety for immediate results the new idea may open a wide field for American products.

A contemporary says: "It is proposed to imitate the example of Germany in this country by fitting out an exposition steamer, to visit all the ports of South America with samples of our manufactures, our business houses dealing in them to send representatives to form business relations and take orders—to make it a kind of combination commercial traveler. If these commercial agents accompanying the floating exposition could each speak Spanish and Portuguese, it would be a most effective mode of increasing our trade with Spanish-American countries. There is no question at all but that Yankee energy and ingenuity will speedily open a vast market there now that attention is turned in that direction." A reporter from the ENGINEERING AND MINING JOURNAL, questioning a number of leading exporters and commission houses, has been unable to locate the proposal; all agreed, however, that the idea, even if it is a second-hand one, is good, and from responses obtained it is evident that such a venture, managed by experienced men, would be successful. An average-sized steamer would constitute a pretty good sample house, and could be arranged to contain examples of most of the merchandise exported from the United States and which South America may be likely to purchase. More than this, in the smaller articles, such as jewelry, tools, etc., stocks could be carried.

One commission house suggests that the actual outlay would be more than met on the trial trip if properly managed if divided among fifty shareholders in a company formed to charter such a steamship for that purpose. To quote the words of one of those interested:

"Many manufacturers and commission houses who desire to push their goods into what is to us commercially unexplored regions, are put to great expense if they desire to compete with the energetic Englishman or German. It is necessary to employ an agent who speaks the language of the country. If he devotes his whole time to one concern the expense is enormous and the returns are small at first.

Of the two foregoing schemes we consider that of establishing sample houses in the principal commercial centers, provided they are on a sufficiently large scale to carry stocks as well as samples, the more advantageous, as we know from correspondents both in South America and the Transvaal, and from personal experience, that the buyers do not care to wait two, four or six months to have orders filled from samples and will purchase inferior goods that are in stock rather than incur delay.

A HINT FOR CARRIAGE BUILDERS.

China has experienced another innovation, the "jin-ric-sha" (man-power carriage) has been introduced. This, as will be seen by the illustration below, is a vehicle very closely resembling many American ones, only that the shafts are shorter, and especially adapted to biped traction.

At present the jin-ric-sha only obtains in Shanghai, but so popular have they become that since their introduction they have been licensed at the rate of about 2,500 per month. It is really a carriage of Japanese origin, but is made in nearly all respects like the light road carriages we use in this country. At the present rate of growth of the new fad in Shanghai there is little doubt that it will soon spread over all points in

JIN-RIC-SHA.

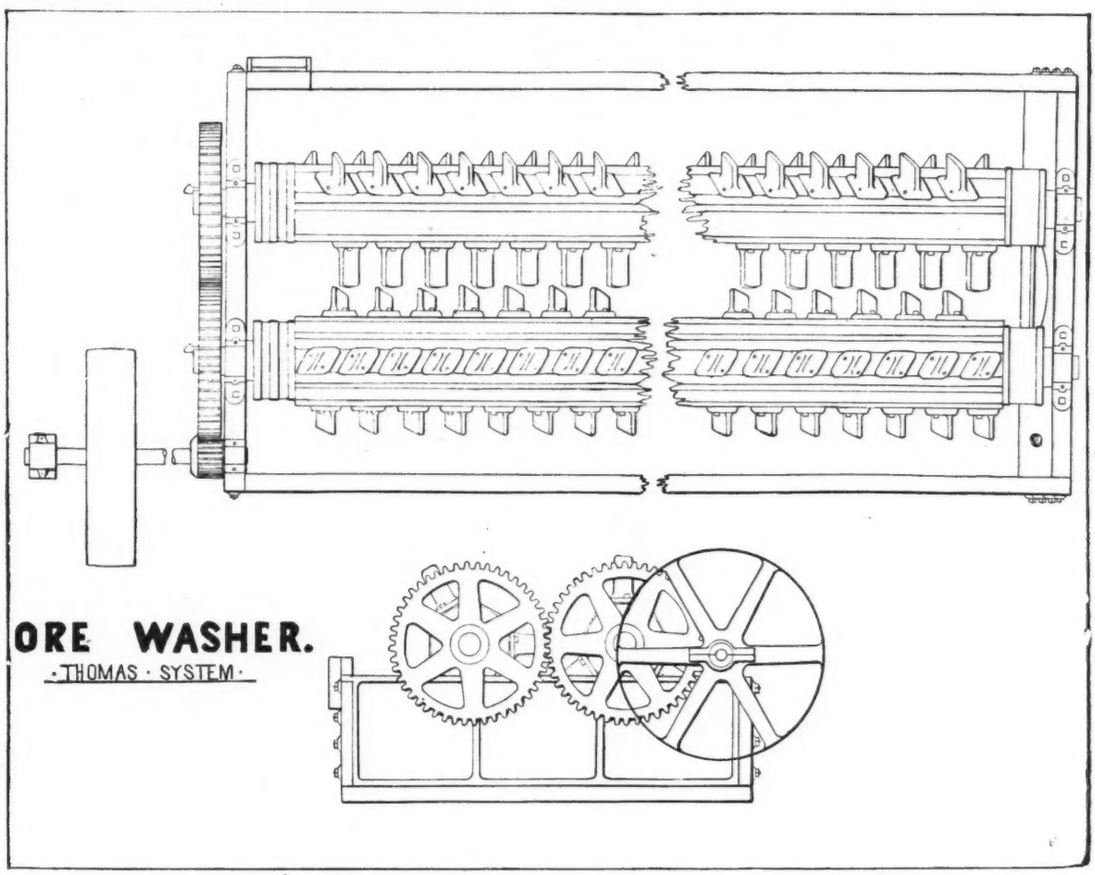
China where European ideas have had opportunity to make themselves felt.

The jin-ric-sha is made in several styles. Those used for hire on the streets are very poor affairs, not upholstered or made presentable to the eye. They are worth about $10 to $15 each. But those for private use are much more costly, and vary in price from $75 to $150 each. The import duty is equivalent to 5 per cent. ad valorem.

With the special manufacturing facilities possessed by American carriage makers, with cheaper, better and more adaptable woods than are found in Europe, and with a comparatively easy means of access, there is no reason why Europeans should monopolize this trade.

THE THOMAS ORE WASHER.

The Thomas ore washer has been designed for rapidly and economically washing the iron hematites and other clay-bearing ores. A number of devices using reciprocating shovels have been tried, and when new and in first-class order they do good work, but the joints soon work loose and the efficiency of the machine is rapidly decreased by "lost motion." The following description of the Thomas washer may prove of interest. The machine consists essentially of a rectangular box having cast iron ends and heavy oak bottom and sides. The box is usually about 25 feet long, five feet wide and two feet deep, having two heavy pieces of timber extending from end to end, and fitted with gudgeons to revolve in suitable bearings on the cast-iron ends of the box. These shafts, or "logs," as they are usually called, are provided with a series of blades or shovels of cast-iron, arranged helically and in such manner that, the logs being revolved in opposite directions, they form two large screws. The main "box" is set at a small angle from the horizontal and receives the ore at its lowest end, while a stream of water enters at the upper end. The "logs" revolve in the ore and gradually move it toward the upper end against the stream of water, with the result that the ore reaches the upper end and leaves the washer by a suitable outlet practically clean, and the water leaves the lower end as tailings carrying the soluble matter with it to a settling dam or stream.



The angle at which the machine is inclined, as well as the quantity of water required, depend largely upon the quantity and character of the clay found with the ore. In addition to such a washer as we have described a rotary screen is sometimes used at lower end of washer to re-wash the tailings when the washer is so run as to allow a considerable quantity of small ore to pass out with the tailings. These machines were originally driven from a steam engine by a chain running over large sheave wheels. The weight was so great and their "swaying" about so injurious to the plant that Messrs. Hauck & Comstock, of Mechanicsburg, Pa., who have been engaged in building these machines for many years, adopted the use of belting in connection with a countershaft at the washer connected to one of the logs by wheel and pinion. This change in the method of driving was so satisfactory that we believe chains have ceased to be used for this purpose. In some cases several washers are run by a common countershaft by means of bevel gearing and a single belt from the engine. At the Boiling Springs ore bank of the Philadelphia & Reading Coal & Iron Company, the above named firm built a battery of four double log Thomas washers, driven by a single belt. This is probably as well arranged a plant for washing hematite ores as has been built. Messrs. Hauck & Comstock give us the following data, which may be useful to those contemplating the use of ore-washing machinery: Water required for a 25 foot double log washer, 35 to 50 gallons per minute; capacity of such a washer, 50 to 75 tons per day; power required, 12 to 15 horse power.

SOCIETIES.

THE AMERICAN BOILER MANUFACTURERS' ASSOCIATION.

Special Report for the Engineering and Mining Journal.

The third convention of this association was held at the Park Avenue Hotel, New York City, on July 1st and 2d. Over a hundred members were present, and the meeting was such an interesting and successful one as to prove that the association has a reason for its existence, and is destined to have a prosperous career. The association is rather a technical society than a trade organization. It makes no attempt to control prices or regulate production, or to antagonize the trade unions. Its meetings are public, and its committee work, reports and discussions are principally of an educational character, all leading to the one general object of how to make a good, strong and safe steam boiler. The objects of the association as stated in its constitution are:

1 To establish such standards for materials and workmanship as will insure uniform excellence of construction of all American boilers, and thus secure safety to the lives and property of all communities where boilers are used, and to procure the passage of laws making the manufacture, sale or use of inferior materials criminal offenses.

2. To concert such measures and take such action as shall be for the interest and advantage of its members especially.

3. To procure and furnish to its members statistics of the trade, domestic and foreign.

After an address of welcome by the president, Mr. James Lappan, of Pittsburg, the secretary, Mr. A. T. Douthett, read his report, showing a most flourishing condition of the association. He defined the object of the association as twofold; first, purely philanthropic and unselfish, working for the general good and safety of the public, trying to compel all boiler makers to use none but the very best material and workmanship in their productions, and to give their customers good and safe boilers; second, to benefit the members of the association by taking such action in regard to their business as should seem expedient. One of the methods of thus benefiting themselves was by forming a boiler insurance and inspection company, concerning which a committee would report during the meeting.

A letter was read from the Secretary of the Treasury stating that at the request of the association a delegation from the United States Board of Supervising Inspectors of Steam Vessels would informally, and for the purpose of consultation, be present at the meeting. The delegation consisted of Supervising Inspector General James A. Dumont, the Supervising Inspector of the New York district, Mr. G. H. Starbuck, and the Supervising Inspector of the Buffalo district, Mr. Alex McMaster. A similar letter from the Secretary of the Navy stated that Chief Engineer Edward A. Magee, United States Navy, would be present on behalf of the navy. These gentlemen were all present, and were introduced to the meeting by President Lappan.

The report of the special committee on manheads and manholes was then called for and presented. It was a model of brevity, but it had on

other merit, for the association discharged the committee for not having done the work assigned to them, and appointed another to do it.

The committee on uniformity of State inspection laws presented a report of progress, and asked to be continued. They stated that, out of 27 States and Territories reporting, only three States had any boiler inspection laws. Several cities had such laws, which were far from being uniform. A lengthy discussion took place on this report. Some members thought that Congress should pass laws for the inspection of land boilers just as it does for marine boilers, but it was shown that the matter is one which, under the Constitution, has to be left to the individual States.

At the afternoon meeting Mr. James W. Connery, patentee of the concave calking tools, presented to the association the right to use his tools free of royalty. The present was accepted with a vote of thanks.

The committee on boiler setting presented a preliminary report, giving a list of about thirty questions, which they proposed to ask the members to answer, concerning the proper method of setting boilers, and the committee promised to compile and compare these answers and make a full report at the next meeting.

The committee on topical subjects then presented a number of questions for discussion, the most important one of which was, "What steps can we take to secure a better class of workmen than we now have." This opened up a very interesting discussion. Many members favored the establishment of the apprenticeship system in some improved form, while others thought that the education of a thorough boiler maker should begin in the office and in the drawing room and not in the shop.

On the second day of the meeting a long discussion took place on a proposal of the Pittsburg Testing Laboratory to do the inspection of steel boiler plates for the members of the association, at the mills where the plates were made, so as to insure that the boiler makers' specifications were complied with at the mills, and to save the trouble and expense consequent upon rejections of plates after receipt at the boiler-shop and after work had been done upon them. A representative of the testing laboratory explained the proposition, stating that the association had already agreed to use one quality of steel boiler plate, and that they had made specifications for the same, viz., 55,000 to 65,000 pounds tensile strength, 20 per cent. elongation in eight inches for plates ⅝ inches and under, satisfactory bending tests, and the chemical analysis to show not over 0·04 phosphorus and not over 0·03 sulphur. These requirements were very good, but they provided no system of inspection or method to insure that the specifications should be complied with. This the laboratory offered to do at a low figure. The association received the proposition, but decided to take no action as a body upon it, leaving it to the individual members.

The election of officers to the association resulted in the re-election of all the old officers, except Mr. Marshall, of Dayton, one of the vice-presidents, who declined to serve. Mr. John Mohr, of Chicago, was elected in his place. In the afternoon an excursion was taken around the harbor.

In the evening a vigorous discussion took place upon the report of a special committee of twenty upon a proposal to form a boiler insurance company, to be known as the American Boiler Manufacturers' Association Insurance and Inspection Company. The reasons for the formation of such a company were presented in a long printed report, which was full of statistics concerning the income of the two principal boiler insurance companies in this country. The present boiler insurance companies were severely criticised on account of their methods of doing business, and especially for their arbitrary control over the boiler makers and unjust discrimination in favor of one boiler maker over another. It is proposed to form a company, with at least $250,000 capital, the controlling interest in it to be held by the boiler makers. Some opposition was made to the proposed company by one or two of the members, but the sentiment of the meeting was almost unanimously in favor of it, and the recommendations of the committee were adopted. The meeting is still in progress as we go to press.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.

We are notified by Mr. Ralph W. Pope, the secretary, that, in accordance with an agreement between the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, the headquarters of the Institute, on and after Monday, June 2d, will be at the House of the Mechanical Engineers, 12 West Thirty-first street, near Fifth avenue, New York. Communications and exchanges should be addressed accordingly. The secretary's office will be in the front room on the third floor; the joint library and reading room on the second floor; the auditorium, in which the meetings of the Institute in this city are to be held hereafter, is on the first floor. The entire premises are being renovated.

Dimensions and Capacity of the New Croton Aqueduct, New York.—Mr. Fteley, Chief Engineer of the Croton aqueduct works, New York, has addressed a letter to Charles H. Haswell, Consulting Engineer, giving the dimensions and capacity of the new Croton aqueduct.

The capacity of the new aqueduct is estimated at 318,000,000 gallons per 24 hours. From One Hundred and Thirty-fifth street the water is conveyed down town in 12 48-inch pipes, with a capacity of 250,000,000 gallons per 24 hours. At Pocamtico River, Saw Mill River, Tibbitt's Brook, and Harlem River, the aqueduct can be emptied through gates provided for that purpose. The tunnel proper is 29·63 miles long, the aqueduct in open trench is 1·12 miles long, and the pipes from 135th street to the Central Park Reservoir are 2·37 miles long. The tunnel under the Harlem is 307 feet below tide water.

Completion of the Cojak Tunnel.—The railroad tunnel through the Cojak, on the line from Quetta to Candahar, has been completed. The Cojak Pass is 7,500 feet above the level of the sea, and about 2,000 feet above the level of the surrounding country. The tunnel pierces the range at right angles, and its course is, therefore, due east and west, and it enters the hill about 1,000 feet below the crest of the pass. The length of the tunnel is 12,600 feet, or two and a half miles approximately, and it will carry a double line of rails. There are two main shafts, one 318 feet and the other 290 feet deep, which were sunk in order to facilitate the construction of the tunnel. The chief obstacle to progress arose from the flooding of the tunnel at more than one point. A large spring was cut, and the water flooded the shaft on the Candahar side to the depth of 180 feet. It took ten weeks to pump out the water, and in the western heading as much as 500 gallons a minute were constantly rushing out of the west mouth. In order to overcome this difficulty a side cutting was made.

Gas and Steam in the Same Cylinder.—In a paper recently read before the French Academy of Sciences, M. Ch. Tellier spoke of a new scheme for cheap power, by which he claims to be able to produce motive-power by using a combustible gas, employing the heat generated by its explosion to generate steam, and the vapor of ammonia. When the gas has operated on the piston, it escapes at a temperature of about 400 degrees into a generator, where steam is produced, which is used to act upon the opposite side of the piston from the gases. There are two advantages claimed for this—the high temperature due to combustion of the gas prevents cylinder condensation, and the steam assists in lubrication. The completed machine for which this claim is made will consist of two cylinders, one making its forward stroke under the action of the explosive gases, and its return stroke by the action of steam; the other is operated entirely by vapor of ammonia. Under these conditions, says M. Tellier, there can be no doubt, theoretically or practically, that .44 pounds of coal per horse power per hour is an economy which can be secured.

Shaft Sinking by the Kind-Chaudron Method.—M. J. Chaudron, in *L'Industrie*, gives a list of shafts sunk by the Kind-Chaudron method since 1878. There are five in Belgium, three in France, one in England, and seven in Germany, or sixteen altogether. Full details and illustrations are given of three of the more important. A new departure was made at the collieries of Gneisenau, Westphalia, by lining the shaft only where it passes through water-bearing strata. This was done by closing the lining with a diaphragm, both at the top and bottom, so as to obtain an air-tight vessel into which water could be admitted as desired to control its buoyancy. In order to be certain of stopping out all the water, the lining was carried upward for a distance of about 82 feet above the water-bearing strata, which were 142 feet thick.

At the salt mines of Thierderhall, Brunswick, great difficulty was experienced, owing to running ground. No less than eight separate linings had to be used, each one just overlapping the next, so that the shaft is reduced in diameter from 13 feet 9 inches to 10 feet 3 inches, at a depth of 354 feet.

The Kind-Chaudron method of boring shafts has been successfully carried out for the eighth time in Germany at Leopoldshall. Several attempts to sink a new shaft having failed on account of the influx of water, the Kind-Chaudron method was adopted, and the shaft completed in 17 months. The small shaft was sunk with a borer 8¼ feet in diameter and about 16 tons in weight. For the subsequent boring down to the impermeable strata, a tool 14 feet in diameter and 20 tons in weight was employed.

Copper Ore and Matte Classification.—The following decisions under the tariff schedule for metals have deen announced:

The copper in silver ore from Mexico has been a subject of a difference of construction as to duty between the customs officer and the importer, the latter appealing from an assessment of duty upon certain copper, ascertained by the "wet assay" to be contained in an importation of silver ore into the port of Laredo, the appellant claiming that the "fire assay" or commercial method should have been used, which would have failed to reveal any copper in the ore imported. After advising with the Director of the Mint as to the proper course to be pursued in this matter, the Department reached the conclusion in 1889 that the "fire or dry assay" should be used by customs officials in such cases. The collector has been directed to cause a retest to be made by such method, and thereupon reliquidate the entry accordingly.

The Treasury Department is in receipt of an appeal from a decision assessing duty at the rate of 3½ cents per pound of pure copper contained in certain so-called copper matte. The appellant claims that the merchandise in question is not assimilable to "regulus of copper," which is dutiable at the rate assessed, but is a rich copper ore obtained by smelting a natural ore in an ordinary blast furnace, and that the copper contained therein should be subject to duty at the rate of 2½ cents per pound under the provision for "copper imported in the form of ores." Upon an examination of the samples of the merchandise in question, and the original ore from which it was produced by smelting, it appears that the product is wholly different from the ore in most characteristics, and particularly in the proportion of pure copper contained, and that it is undoubtedly a matte or regulus, and not an ore. The Collector's decision, assessing duty on the said matte at the rate prescribed for regulus of copper being in accordance with the Department's decision of July 29, 1889, wherein "matte" and "regulus" are declared to be synonyomus terms, is affirmed.

DIVIDENDS PAID BY MINING COMPANIES DURING JUNE AND SINCE JANUARY 1ST, 1890.

NAME OF COMPANY.	Paid in June.	Paid since Jan. 1st.	NAME OF COMPANY.	Paid in June.	Paid since Jan. 1st.
Alice, Mont	.....	$25,000	Horn Silver, Utah	$50,000	$100,000
Atlantic, Mich	.....	60,000	Idaho, Colo	7,750	7,750
Aspen, Colo	$20,000	80,000	Iron Mountain, Mont	.....	25,000
Badger Ontario	.....	37,500	Kearsarge, Mich	.....	100,000
Bangkok - Cora Belle, Colo	.....	3,000	Little Chief, Colo	.....	10,000
Boston & Mont., Mont	.....	400,000	Little Rule, Colo	10,000	40,000
Caledonia, Dak	8,000	24,000	Mammoth, Utah	40,000	200,000
Calliope, Colo	5,000	45,000	Matchless, Colo	.....	2,500
Calumet & Hecla, Mich	.....	1,000,000	Metropolitan, Mich	.....	*250,000
Candelaria Con., Mex	.....	30,000	Montana Ltd., Mont	.....	100,844
Central, Mich	.....	20,000	Napa, Cal	.....	30,000
Champion, Cal	.....	10,000	New Guston, Colo	.....	50,000
Cœur d'Alene, Mich	.....	20,000	Ontario, Utah	75,000	450,000
Cortez, Nev	.....	60,000	Oro, Colo	20,000	100,000
Cons. Cal. & Va., Nev	.....	162,000	Osceola, Mich	50,000	150,000
Cumberland, Mont	.....	15,000	Parrot, Mont	.....	72,000
Daly, Utah	37,500	225,000	Poorman, Colo	.....	2,000
Derbec Blue Gravel, Cal	.....	10,000	Puzzler, Col	.....	5,000
Don Enrique, Mex	.....	3,000	Quicksilver Pref., Cal	.....	128,739
Elkhorn, Mont	50,000	50,000	Reed & National, Colo	.....	10,000
Franklin, Mich	.....	80,000	Quincy, Mich	.....	120,000
Granite Mountain, Mont	200,000	600,000	Republic, Mich	.....	100,000
Hecla Cons., Mont	.....	15,000	Silver Mg. of L. V., N. M	.....	50,000
Homestake, Dak	12,500	75,000	Tamarack, Mich	.....	240,000

*Part of this dividend was paid in January.

PERSONALS.

Mr. Wm. Martin, Secretary of the Amalgamated Association Iron and Steel Workers, has resigned and refuses to make his reasons public.

Mr. Robert Peele, Jr., Mining Engineer of New York, sails for Peru, S. A., on the 10th inst. He goes there to examine gold and silver mines and will be absent a year.

Mr. John Hays Hammond, mining and consulting engineer of San Francisco, has been appointed mineral expert of the Central & Southern Pacific Railroad Company. This position will not interfere with his experting works.

Mr. Charles M. Noble, for the past 15 years superintendent of the Woodstock Iron Company furnaces, Anniston, Ala., has resigned his position, and will connect himself with the Ruttan Manufacturing Company, soon to be organized for the manufacture of heating and ventilating apparatus, etc.

The firm of Ladenburg, Thalman & Company, New York, announces its dissolution and the organization of a new firm under the same style with a special capital of $1,000,000. The general partners are Adolf Ladenburg, Ernst Thalmann, Richard Limburger. The specials are Gerson Von Bleichroeder and Julius Schwaback.

OBITUARY.

Mine Inspector David Jonathan, died at his home, in Hazleton, Pa., on the 1st inst.

Mr. Francis C. Yarnell, vice-president of the Lehigh Coal and Navigation Company, died last Thursday at his residence at Overbrook, Pa., aged sixty-one years. Mr. Yarnell was widely known in railroad circles, being president of several of the Lehigh branch lines.

John Page, chief engineer of the Dominion canals, died suddenly of heart failure in his office at Ottawa, Canada, on the 2d inst. He was seventy-four years of age. Mr. Page led an active life. He entered the civil service in 1842 and made a great reputation by his connection with the development of the canal system.

ITEMS FOR EXPORTERS.

An occasional correspondent from Guadalupe y Calvo, Mexico, writes us: "We have in this canton three ten-stamp mills and one forty-stamp; they are also about putting up a smelting furnace for reducing galena ores a short distance from this town. All these establishments have good veins of ore and are doing moderately well. Each hacienda, or mill, imports their tools, machinery and supplies from the United States.

I presume that the manufacturer putting his goods down here at a low rate could make a reasonable profit, to wit: steel of all kinds, shovels pointed or square; picks, sledges, powder, fuse and caps, and innumerable things that are needed to extract gold and silver."

Trade between the United States and Dutch India is suffering from innocuous desuetude. Consul Horatio G. Wood, writing from Batavia, suggests that if some enterprising American will charter a small sailing vessel, load it with American sewing machines, cotton drills, clocks, canned goods, and so on, he will find it a profitable venture. Macassar is a free port, and there is abundance of coffee there for return freight.

Kansas City & Mexican Investment Company has been incorporated in Kansas City, Tex., with a capital of $500,000. Its purpose is to extend the commercial relations between the United States and Mexico.

Messrs. W. H. Chick, J. Morris, W. J. Anderson and Joaquin A. Vargas are respectively president, vice-president, treasurer and secretary. The directors are: Messrs. Brown, Manzanares y Cia, of Soccorro, New Mexico; Joseph Hampson, W. H. Chick, Frank Chick, W. J. Anderson, August Meyer, A. J. Morris and O. W. Butts, all of Kansas City; MM. Alberto Malo and J. Castello, of Mexico.

INDUSTRIAL NOTES.

Notice has been posted by the Columbia and the Susquehanna Rolling Mills and the Columbia Iron Company, Lancaster, Pa., of an advance in puddlers' wages from $3.85 to $ 4 a ton and other employés in proportion.

Difficulty with the men caused a shut down of the rod mill of the barb wire works in Allentown, Pa., on the 1st inst. The men wanted the mill placed under the rules of the Amalgamated Federation of Iron and Steel Workers.

While workmen were unloading a tank of crude oil at the Standard Oil Refinery in Louisville, Ky., on the 30th ult., an explosion occurred and seven men and boys were burned, three, it is thought, fatally. The loss on stock is estimated at $30,00 or $40,000.

The men employed at the Fishbach Rolling Mills of the Pottsville Iron and Steel Company, Pottsville, Pa., struck on the 30th ult., because the president and general manager refused to sign the wages scale. It is reported that arrangements are being made for the settlement of the strike, but it is hardly possible that the difficulties will be adjusted until next week.

The Secretary of State of Illinois issued licenses on the 27th to the following: Gathmann Ordnance Company, at Chicago; capital stock, $500,000. Incorporators: Louis Gathmann, August Gathmann, Henry Gathmann. American Shot and Lead Company, at Chicago, to manufacture shot, lead, pipe and metallic goods; capital stock, $3,000,000; incorporators, Frank S. Weigley, A. W. Bulkley, E. E. Gray.

The International Okonite company has been formed to acquire the business of the Okonite company of New York which manufactures insulated wires and cables for electric and other purposes. It will extend this industry in England, where it has acquired the control of the wire and cable works of Shaw & Connolly, of Manchester. The prospectus of the company, it is stated, indicates that the business as now operated results in profits which can be made still greater by the programme for extension which is mapped out.

A company of British captalists has obtained control of the Roach shipbuilding yard, at Chester, Pa., and its branch, the Morgan Iron Works, in New York. The new corporation is to be known as "Roach's Shipbuilding and Engineering Company, Limited." The total capital is nearly $4,500,000. The Board of Management in the United States will include John B. Roach, President of the Delaware River Iron Shipbuilding and Engineering Works, and George E. Weeks, President of the Morgan Iron Works.

The Pennsylvania Rolled Steel Car Wheel Company, Norristown, Pa., organized for the manufacture of steel and steel wheels under patents controlled by the Continental Rolled Steel Car Wheel Company, has merged with the latter into a new organization to be known as the Norristown Steel Company. The capital stock of the new concern is $200,000, divided into 4,000 shares, of a par value of $50. Only full paid shares will be issued, and given in exchange for shares of the Continential and Pennsylvania.

The Directors of the Norristown Steel Company are S. D. Hawley, L. K. Passmore and Lewis T. Brooke, of Philadelphia; H. H. Haines, of Rising Sun, Md.; Lewis Royer, Theodore W. Bear, Ellis ton M. Daniels, Samuel M. Moore, William B. Rambo, J. P. Hall Jenkins and Horace C. Coleman, of Norristown. The directors have elected S. D. Hawley, president; Joseph M. Cranston, of Philadelphia, treasurer, and J. Clinton Sellers, secretary. The Continental Company receives $50,000 worth of stock in the new company for its patent, and the stockholders of the Pennsylvania will have fully paid shares, whereas, formerly they were liable to an assessment on the stock.

The plant in the eastern suburbs of Norristown, on which work was commenced some time ago by the Pennsylvania company is well under way, so far as the masonary is concerned, and the boilers will be placed in position in a few days.

CONTRACTING NOTES.

The Secretary of the Navy issued a circular on the 2d inst. to ship and marine engine builders inviting proposals for the construction of a protected cruiser of about 7,300 tons displacement at a cost, exclusive of armament, of not more than $2,750,000. The hull of the vessel is to be built of steel, not sheathed, and an armored deck is to extend all fore and aft, being turned down on each side to meet the side of the vessel below the water, of a maximum thickness of four inches over the engines and boiler spaces. All the material, including engines, boilers, machinery, etc., is to be of domestic manufacture, and the vessel is required to maintain an average speed of not less than 21 knots for four consecutive hours. The main battery will aggregate 88 tons, and includes four 6-inch guns and eight 4-inch guns. The secondary battery will include 12 6-pounders, four 1-pounders and two machine guns, and there will also be four torpedo tubes and discharging apparatus. At least 750 tons of coal must be carried on a mean draught of 23 feet. Proposals are invited under two classes, one according to the plans and specifications provided by the Secretary of the Navy, and the other according to plans and specifications submitted by the bidder.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

923. A re-sawing machine. North Carolina.

924. Ax handle, spoke, and hoop machinery. Florida.

925. One thousand feet of wrought iron or steel pipe in lengths of 10 feet 4½ inches, guaranteed to stand a working pressure of 350 pounds to the square inch, having wrought iron flanges. F. o. b. cars. North Carolina.

926. Steam heating apparatus for one dwelling and one new school-house of three rooms. Maryland.

927. A centrifugal machine such as was formerly in use in California for crushing quartz. Michigan.

928. Electric light plant; dynamo capacity 175, 16 candle power, incandescent lights; but only 125 lights needed at present. North Carolina.

929. Machinery for turning out portable houses. Virginia.

930. Machinery for a spoke factory; about 80 H. P. boiler and engine, 12 spoke lathes, 150 ft. 2 11-16 in. shafting, pulleys, belts, sand belts, machines, exhaust fan and equalizing saws; all of the very best make. Tennessee.

931. About 4,000 barrels Portland cement. Missouri.

934. Artesian well machinery. Florida.

935. A 25 H. P. boiler and engine and a stave mill. Virginia.

936. A 10 × 15 engine and 30 H. P. boiler with return flues. Alabama.

937. 30-inch band saw, swing saw and cut-off saw. Alabama.

938. Machine shop equipment, fire bricks, boilers, blowing engines, hoisting engines, plate iron, and castings for blast furnace. Tennessee.

939. A 10 × 16 cylinder standard gauge saddle tank locomotive, with three drivers. Tennessee.

940. Saw mill, about 50-inch, patent tooth preferred; carriage, about 25 feet long, belt pulley 12 × 26 or 30 inches, ratchet head blocks and sett. Georgia.

941. A second-hand iron tank, not less than one-fourth inch iron, about 8 or 10 feet in diameter and about 8 or 10 feet deep. Pennsylvania.

AMERICAN GOODS WANTED ABROAD.

905. Addresses of manufacturers of barb wire and pulverizing cultivators. West Indies.

906. Machine for hulling castor-oil beans. Mexico.

907. A party in Mexico would like to represent manufacturers of plows, cultivators, seed sowers, corn shellers, grain mills, fodder cutters, churns, ce cream freezers, barb fence wire, stretchers and diggers.

932. Information concerning machinery for shelling castor-oil beans. Mexico.

933. Machinery for grinding up logwood or Brazil wood. Mexico.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and ncluding June 25, were as follows:

			Tons. 1890.	Tons. 1889.
Marquette,	Marquette	District	398,415	458,660
St. Ignace,	"	"	13,059	15,375
Escanaba,	"	"	439,000	308,721
"	Menominee	"	634,075	531,889
"	Gogebic	"	105,249	87,151
Ashland,		"	720,336	434,350
Two Harbors'	Vermillion	District	208,167	239,055
Total, tons			2,509,301	2,075,201

Two warehouses at New Orleans, La., owned by the Standard Oil Company, occupying considerable space in the rear of the city, were burned on the 1st inst. A number of tanks containing in all 1,050 barrels, and two others containing 5,500 gallons were burned. A large supply of terpentine and resin barels were also destroyed. A building and a stable owned by the company, the building occupied by Messrs. Simpson & Vizard, containing 1,000 empty barrels and 900 barrels of resin, and the warehouse of the Aaron Brewster Oil Company, containing about $2,500 worth of oil, also fell a prey to the flames. A number of other buildings were more or less damaged. The total loss is placed at $100,000.

NATIONAL SULPHUR COMPANY.—This company, capital $10,000 (or, as other reports have it, $10,000,000), has just been incorporated in Covington, Kentucky, for the purpose of preparing for the market sulphur, petroleum, salt, iron, copper and gypsum. The incorporators are Cornelius Beard, Charles M. Bruge, William Van Sloocin, Frank M. Kerr, Judge O'Hara and E. K. Wilcox, of Cleveland, who organized the company.

ARIZONA.

MARICOPA COUNTY.

PHŒNIX MINING COMPANY.—The United States Government has established a post office at the Phœnix Mine. The station is called Cave Creek, Arizona Territory.

CALIFORNIA.

AMADOR COUNTY.

NORTH STAR MINING COMPANY.—This incorporation of Sutter Creek was organized over three years ago for the purpose of developing the North Star claim, between Sutter and Amador. The sum of $38,000 has been raised by nineteen assessments of two cents each per share. These assessments have all been paid without any stock being advertised as delinquent. It is alleged that the property has been economically and efficiently managed, evidenced by the amount of work done. It is a matter of regret, says the Amador *Ledger*, that the operations of this company have not been crowned with substantial encouragement in the discovery of precious metals, for no body of prospectors ever worked harder, or more persistently and intelligently than they. It is now the intention to sink the shaft 200 feet deeper, making a total depth of 1,000 feet. A thorough exploration by drifts and cross-cuts will be made at this depth.

The following statement of receipts and expenditures for the past year, ending June 1, was presented to the annual meeting recently held:

Balance on hand as per last annual report.....	$1,158 99
Six assessments, 13 to 18, inclusive of $2,000 each	12,000 00
Total	$13,158 99
Expenses.	
Construction.....	$ 341 66
Labor.....	9,018 50
Mine Supplies.....	458 68
Timbers	149 50
Water power.....	728 00
Lumber.....	46 54
Powder, etc.....	713 55
Real estate.....	202 29
Incidental.....	176 87
Total.....	$11,735 59
Balance on hand June 1.....	1,523 40
Average monthly expenses.....	977 96

The shaft was sunk 207 feet, with 557 feet of drifts and crosscuts, at an average cost of $15.50 per foot. The total sinking is 902 feet. All developments to far show indications that the mine would prove better at a greater depth. So the directors of the corporation decided to suspend all explorations at the 600 and 800 foot levels and sink to 1,000 feet, and there make a thorough prospect, having an agreement with the original owners of the North Star mine for an extension for one year on first payment as per agreement, April 1, 1889. The assessments have all been paid without any being delinquent. The old board of directors was re-elected as follows: E. C. Voorheis, President; H. H. Towns, Treasurer; R. C. Downs, H. Rees, J. R. Tregloan, J. L. Mayon, Secretary.

COLORADO.

THE MUTUAL BENEFIT MINING AND MILLING COMPANY.—This company, which owns a large tract of mining territory on Woody Creek, recently held its annual meeting for the election of a board of directors. The following gentlemen were elected to serve for the ensuing year: Hal Sayr, Dr. Henry Paul, J. J. Hagerman, D. M. Hyman, W. E. Newberry, and E. A. Whitmore.

BOULDER COUNTY.

The forest fires near Boulder, of which mention was made in our last issue, are practically extinguished. The burned district covers about 2,500 acres. Only one building was destroyed, the shaft house of the Baltimore mine, owned by Dr. Charles Palmer, of the State University.

CONEJOS COUNTY.

VALLEY QUEEN MINE.—This mine at Platoro was sold at Monte Vista on the 21st ult. to J. C. Eames, of Aspen, it is said, for $50,000. This mine is showing high-grade ore. The purchaser has already a full day and night force at work sinking the shaft, and will immediately place machinery there to facilitate the work and commence shipping ore.

OURAY COUNTY.

(From our Special Correspondent.)

OURAY, June 29.

A St. Louis company, of which L. L. Culver is president and general manager, is putting up a 50-ton mill on the Mickey Breen group of mines. They are located about five miles above Ouray, on the Uncompahgre river, and have the reputation of being very rich and extensive properties. There are twelve or fifteen claims in the group, and on some of them considerable development has been done. A cross-cut has been run nearly 2,000 feet, cutting the Mickey Breen vein, the Royal Albert and Prince Consort, and is still going ahead to cut others. The company is strong and is operating on a broad-gauge plan. The mill will be completed and put in operation in August. It will contain two set of Cornish rolls, Huntington mill, jigs, and six of the Coplen concentrating tables, and will be one of the very best in the San Juan.

BRIGHT DIAMOND COMPANY.—A mile below Ouray this company is erecting a large mill. It will have a capacity of 25 or 30 tons in the beginning, but is designed to be increased to 50 tons or more if the output of ore should justify it. It is to contain a Huntington pulverizer, plates and the necessary appurtenances. A flume has been built about half a mile in length, to convey water to the mill for power, water in this mountain region being plentiful, and by far the cheapest power to be had here.

SARATOGA COMPANY.—This company, near Ironton, is putting up a lixiviation plant to cost $500,000. In fact, in all the San Juan districts extensive mills are being erected, and the mining interests are greatly stimulated. The ore output of the San Juan since January is already double that of any year in the past.

THE SLIDE MINE.—This property, located in the Paquin district, on the north end of the gold belt, was sold a few days ago to a Kansas city company for, it is rumored, from $100,000 to $150,000. Sam. W. Gregory, a successful merchant of Kansas City, is president and treasurer of the company and F. L. Butterfield general manager. The new company took possession of the property this week and is putting on a large force of men. It is taking hold of the enterprise as if there were millions in it, and some people here think there are. The purchase included three properties—the Slide, Slide Extension and Scotsman. They disclose large bodies of ore, are true fissures, and rich in chlorides, bromides, gray copper and brittle silver.

The per cent. of lead is quite small, but the ore carries ¼ to ½ ounce in gold, and can be rapidly and cheaply mined. The company proposes to run the output from twenty-five to forty tons daily, which will net an average of $60 per ton. In addition to the high grade ore there are vast bodies of low grades that can be profitably treated at the Coplen concentrating mill, located near the property. This is a new syetem of concentrating, recently patented, and is said to be working very successfully.

PITKIN COUNTY.

The ore shipments from the camp says the Aspen *Daily Chronicle*, have become so heavy that the railroad companies find themselves short of rolling stock to accommodate the demands for transportation. For some time there has been sharp rivalry between the various shippers to secure cars. Dr. Paul, manager of ths Aspen mine, states that their Midland ore bins have been filled with ore for some time, the company being unable to furnish sufficient cars to handle ore. The mine has, therefore, been shipping a great part of its product over the Rio Grande. The latter company has also run short of cars, and found it necessary to ask the railroad company for greater transportation facilities, as, otherwise, the mine would be compelled to close down. The sampling works are all busy, and they demand cars the moment they have ore ready to ship. The result is that they are always in conflict with the mine managers, who ship their ores direct, and all hands are chasing after the cars as soon as they arrive in the yards.

SUMMIT COUNTY.

HUNKIDORE CONSOLIDATED SILVER MINING COMPANY.—Articles of incorporation were recently filed with the secretary of State by this company. The incorporators are: Horace A. W. Tabor, Lafayette Seaman, Peter McCourt, and Gilbert R. Argersinger, who, with William L. Smith, Samuel W. Jones, and Charles M. Perkins, are the directors for the first year. The object for which the incorporation is formed is the acquiring and operating of mines of silver-bearing ore in the county of Summit and doing all things incident to the general object of mining. The capital stock is $750,000, shares $1 each.

IDAHO.

Another "mining camp" becomes a State, the Senate having passed on the 1st inst. the House bill admitting Idaho to the Union.

ALTURAS COUNTY.

VENUS.—This mine has yielded about $25,000, and four-fifths of that sum have been expended in development work. Although the surface ore is by no means exhausted, Mr. Domski, the owner, over a year ago began work on a deep tunnel intended to tap the vein at the point where the second chimney or channel of ore should be found. The indications are that he is to be rewarded. In fact his workings already show ore, and he could begin shipping now if he wished. But as he proposes to do more development work he will not ship for another month or so. By that time the workings will have been extended so as to open the two veins found in his ground, and by making a couple of air connections he will be enabled to employ a large force to the best advantage.

MAINE.

SAGAHADOC COUNTY.

The work of boring for coal at Small Point, near the mouth of the Kennebec, goes slowly on. The drill has been sunk to a depth of 500 feet with the following result. At a depth of 101 feet a vein of coal ⅛ inch in thickness, it is reported, was found. At 200 feet another, one inch thick; 275 feet down the vein was 4 inches thick; 480 feet ½ to one inch thick. It is not expected that anything of greater thickness will be reached short of 600 or 700 feet below the surface. The project will not be abandoned as long as a trace of coal is to be found.

MICHIGAN.

COPPER MINES.

(From our Special Correspondent.)

HOUGHTON, July 3.—*By telepraph.*—The Supreme Court of the State of Michigan yesterday rendered a decision compelling the Secretary of State to file the renewal of the charter of the Seneca Mining Company. The effect of this decision is to verify the constitutionality of the law passed a year ago enabling mining companies to continue their corporate existence upon filing a certificate of renewal with the County Clerk and with the Secretary of State.

The Atlantic strikers were out two days. Resumed work this morning at 10 per cent. advance.

(From our Special Traveling Correspondent.)

THE ISHPEMING GOLD RANGE.

The Ishpeming gold range has been the object of much attention to the mining men of this section since the rich discoveries first made in the Michigan in 1887 and the Ropes in 1882. Your correspondent recently visited the district, finding much that will interest the readers of the ENGINEERING AND MINING JOURNAL. It lies in town 48, range 27 and 28, being northwest of the city of Ishpeming, a distance of four miles. The geological formation of this district is distinctly marked and can be said to be of an interesting nature. A granite ledge, with an easterly and westerly trend, forms the northern boundary. To the south, adjoining, and having the same general trend, lies the diorite, about a mile in width. To the west the diorite separates from the granite, making room for the serpentine and limestone, the latter lying to the north of the former.

It is between these last named formations, at the western end of the ledge, that the contact vein of the Ropes mine is located. At different points through this diorite ledge and running at different angles, as well as between the granite and diorite, the quartz veins carrying gold, silver and baser metals are found. The geology of this section, with respect to these veins, has been so imperfectly worked out that it is hard to say whether the majority are true fissure or contact veins. Undoubtedly there are many of each. This entire tract of territory, one mile wide by three miles long is held as gold bearing property. Many companies have been formed and considerable exploration carried on. They are designated as follows: Grayling, Peninsula, Lake Superior, Gold Lake, Gitchigume, Grummett, Brown Case, Giant, Michigan, and Ropes.

Much has been said and written concerning the prospects of these different properties, and to the effect that explorations and limited development have proved beyond a doubt that there is gold here, and that the future is bright. Those most interested in the development of the range, the present owners of the different properties, although confident that they have a good thing, have no object in, neither do they seem disposed to boom their holdings. Rather they would prefer that nothing be said than that exaggerated reports be sent out. They expressed to the writer a very laudable and legitimate desire that the true merits of this range be brought before the world through the medium of the ENGINEERING AND MINING JOURNAL, with a view of inviting inspection and interesting co-operation. From the matter descriptive of certain of the properties, which is to follow, the question will naturally arise, "Why have those interested not made more progress in proving up their holdings if their prospects are as good as stated?" It must be remembered that with the exception of the Ropes, explorations commenced here hardly more than two years ago; that the country is new and barren, and that the winters in this section are long and severe.

These causes coupled in some instances with a lack of capital and experience have not been conducive to a spontaneous development of the range, and there are many local men who are of the belief that the slow, steady development has been of a nature to insure a permanent and healthy development of the country.

THE GREYLING.—This mine lies directly west of the Peninsula, being the south one-half of the southeast one-fourth of section 26. The first discovery of gold within these boundaries was made by J. Maurice Finn, in January, 1889, it being the detection of a small feeder lying 75 feet to the north of the main vein.

Further search located the outcropping of this large vein at the point where it dips into a large ravine. It is capped with diorite in its half mile course across the property and again crops out a short distance from Gold Lake. A shaft was sunk 91 feet into the leader and a cross-cut driven to the vein. At the point of intersection the vein matter was found to carry from 50 cents to $1 in gold and silver per ton. It was then decided to use the diamond drill. The vein was followed 381 feet on an angle of 58 degrees. Analyses made from selected parts of this core are said to have assayed $24.53 per ton, also that accurate tests made of the

poorest rock of the core averaged $1.44 per ton. A second drill hole was started near the center of the property. After passing through 48½ feet of drift and a ten-inch capping of quartz 30 feet of rotten vein matter was encountered. When between 70 and 80 feet down, and before cutting into the diorite, particles of free gold were washed out in the sludge. This vein matter was so soft that it made no core, the only results being a few small "bobbins" of a reddish color. Work continued until the rods became so thoroughly fastened as to render their removal impossible. A shaft is now being sunk to release them, and at the same time to explore the vein. The big vein, although appearing on the surface as a fissure vein, is held by Mr. Finn to be a contact lying between the great diorite and granite formations. The granite crowds down upon the Peninsula—the property to the east—in the form of a horse shoe, crossing the west side of the Grayling 10 degrees west of a line drawn north and south. The neck of diorite lying south has evidently crooked in cooling from a point on the Peninsula across the Grayling to the granite. The granite dips down under the diorite at the point of contact at an angle of 45 degrees.

This property is regarded by local experts to be one of much promise, and its greatest need seems to be the co-operation of men of experience in gold mining.

THE MICHIGAN.—This property consists of 40 acres described as the N. W. ¼ of the N. E. ¼ of Sec. 35, town 48, range 28. The main vein runs through the center of the property, outcropping over a greater portion of its length. It has been uncovered along its entire course to a depth of from 6 to 10 feet. At a point 180 feet east of the west line, a shaft has been sunk a distance of 92 feet. From the bottom of this shaft a cross drift has been driven 40 feet west and a second 100 feet east. Seventy-five feet east of this shaft a second one has been sunk a distance of 60 feet, and well hole with the drift at the 92-foot point. No. 3 shaft has been started 300 feet east of No. 2, and 300 feet still further east is located No. 4 shaft, now down a distance of 92 feet.

A cross-cut has been started east from this west shaft, it being the intention to connect the east and west shafts at the 92-foot level, lower Nos. 2 and 3 shafts until they connect, and then open up the mine by another level. Your correspondent inspected the mine. The vein, strictly speaking, is divided into two sections by a slip of porphyry, being about two feet wide on each side. As the descent is made, this slip seems to approach nearer the foot wall, and the supposition is that it will disappear altogether as depth is attained, leaving the vein clear and of full width. The dip near the surface was about 80 degrees; lower down it approaches nearer the vertical. The vein matter consists of quartz, slate, porphyry, graphite, carrying gold and silver with pyrites and other substances.

The hanging wall is diorite, the foot granite. The rock exposed to view in the vein did not show gold to the naked eye. However, the writer was shown 20 large pieces of quartz that had been recently picked out, in which gold was plainly visible. It was in the 55-foot shaft, about 30 feet from the surface, that the rich "chimney" of gold was struck. It was as thoroughly impregnated with gold as the Calumet conglomerate rock is with copper. Several hundred pounds of this rich quartz were taken out.

During the earlier part of the year just passed the company employed only sufficient labor to enable them to hold the lease—the fee is owned by Peter Grugrars, who receives a royalty of 10 per cent.—pending the outcome of litigation brought by claimants for the property under a former option. In November the case was decided in favor of the Michigan Gold Company, and the management started a larger force. A small, and it has since been proven inefficient, mill was constructed, and a greater portion of the rich rock heretofore taken out was milled. Owing to cold weather and other causes the work was not carried on very energetically. Early the present spring the Cleveland parties announced that they wished to relinquish the management, owing to a press of other business, and it was turned over to a board of local directors, consisting of Peter White, Samuel L Mitchell, A. N. Meyer, Jas. R. Cooper and David M. Ford. The last named gentleman was elected managing director. The new board is composed of representative mining and business men of this section, who will give to the management of the property all the attention it requires. After Mr. Ford took the managing directorship he unearthed a nest of alleged gold thieves. Your correspondent witnessed the opening of a trunk belonging to one of the accused parties by an officer. It contained, at a conservative estimate, $1,500 in gold rock.

The new management has decided to open up the property in the manner set forth preceding. As soon as the openings are far enough ahead a a new and permanent mill will be put in. Before deciding on the kind of a plant, the company is waiting to learn the results obtained by the five foot Huntington mill which the Ropes company is putting in on trial. A compressor and hoisting plant of suitable size to meet the requirements of the mine for years will be added. A man skilled in gold mining and milling will be placed in charge.

Some time ago 70 tons of Michigan rock, which it is said, was selected with reference to its being an average, was treated in the Ropes mill. It panned out $6.68 per ton. During this test it was found that in a specified time from 11 to 12 tons of rock passed through the batteries, while during the same time and under similar conditions from seven to eight tons of the Ropes rock were treated.

While comparisons are said to be odious, they are, perhaps, allowable to illustrate a point, namely, that the Michigan, under proper management, can be made a "gold mine" to her owners. The Ropes mine is now working a hard quartz, a portion of which they hoist as high as 800 feet. Its average yield per ton of rock last year was $3.18, and it shows a balance in the treasury for last year's work. The Michigan rock, as far as tested, has proven to be fully as good, if not richer, than this. Its upper levels are being opened up, and the present rock will bear one-third easier. Why is not the mine's future promising? Your correspondent has no hesitancy in saying that under the present board the mine will be given a fair and impartial trial.

THE PENINSULA.—This property consists of the S. E. ¼ of S. E. ¼ of Sec. 25. A vein running east and west through the center of this "forty," having a width of 32½ feet, has been uncovered. Starting from a point at about the center of the vein and running south at right angles, a second vein has been uncovered. A third vein joins the extremities forming a triangle. A fourth vein forms a triangle on the opposite side. The whole may be described as forming a T with its three extremities connected. Several shafts have been sunk and some drifting done. Work is now being carried forward in these different workings and the showing of quartz which is being made is good. The controlling interest in this property is held by Detroit parties.

MONTANA.

DEER LODGE COUNTY.

(From our Special Correspondent).

BUTTE, June 21.

The town of Anaconda, which takes its name from the smelter, and the latter from the Anaconda mine in Silver Bow County, depends on the running of the smelter for its prosperity. There are rumors of trouble between the Anaconda Company and the railroad. The only railroad the town has is the Montana Union, which is worked jointly by the Union Pacific and Northern Pacific roads. The Montana Union carries all the ore from the mines in Butte to the smelter, for 40 cents per ton, this price including switching at both ends. The grades are very heavy, and require specially large engines to do the work. It is said that 40 cents per ton will not cover the total cost to the railroad. The distance between mines and smelter is about 26 miles.

The smelter is divided into the Upper and Lower works. The Upper works are subdivided into No. 1 and No. 2 works. At No. 1 there were 13 matting furnaces, 12 hand-roasting furnaces, and one Bruckner roasting cylinder. All the matting and hand-roasting furnaces have been torn down. The matting furnaces will be rebuilt as rapidly as possible, and will probably be larger than the old ones, and capable of doing more work. The hand-roasting furnaces will be replaced by Bruckner cylinders, and these will be so arranged that the hot roasted ore can go directly to the matting furnaces.

At the No. 2 works are 14 matting furnaces and 14 hand-roasting furnaces. These furnaces are all running. One of the matting furnaces, however, is used for making pig copper of about 98 per cent. to 99 per cent. copper. This has only been done since the company has been making experiments in refining by the electrolytic process. It is believed that these works will be torn down as soon as the No. 1 works are ready to run, and that the hand-roasting furnaces will be replaced by Bruckner cylinders.

At the lower works there are 28 matting furnaces and 40 Bruckner cylinders. These furnaces are all running. The average output per matting furnace per day is about 4,000 lbs. of matte. This would make the present output of the 41 furnaces producing matte 2,460 tons per month.

Eighty tons of matte per furnace would have been a fair monthly output. This would have given a total for the whole works (55 matting furnaces) of 4,400 tons, yet official figures for March gave their product as 5,500 tons, which would be 100 tons per furnace.

It is reported that the company has decided to build its refining works here. They find by utilizing their water power two or three times over, they can get sufficient power to run refinery. I understand that the company's brick-kilns are being worked to their utmost capacity in order to produce the brick needed for the erection of these works.

It may not be amiss here to make a few comparisons between the work reported to be done by some of the different smelting companies with the Bruckner cylinder. At the Anaconda smelter they state that in 24 hours they burn off the sulphur to 6 per cent. on 12 tons of ore, with a consumption of ¾ ton of coal. One man on a shift runs three furnaces.

At the Colorado smelter in Butte there are two Bruckner cylinders in use. The ore roasted contains a considerable amount of zinc-blende, and it is found necessary to roast a charge for from 72 to 84 hours to burn the sulphur off to 3 per cent. I do not know what the consumption of wood is, but when the charge has been burning about 30 to 36 hours, and all the sulphur in combination with the copper appears to have come off, the charge becomes black and the firemen have to pile on the wood and get up as great a heat as possible until the charge commences to burn again. With a charge of ore of this character it must take about 9 cords of wood to calcine 12 tons.

At the Butte Reduction Works there are two cylinders, one a Bruckner and the other a Brunton. The company reports that they prefer the latter style, as both ends are smaller in diameter than the center, and the ore appears to shift its position better than in the Bruckner, which is the same diameter throughout. The ore calcined by these furnaces varies very considerably as a great deal of custom ore is worked. In the Bruckner cylinder, which is the same size as those used by the Anaconda and Colorado Companies, they roast 12 tons of ore containing 15 per cent. zinc in 36 hours and reduce the sulphur to 12 per cent., burning three cords of wood every 24 hours. In the Brunton cylinder the company used to roast six tons of ore every 24 hours to about 10½ per cent. sulphur, using two cords of wood. They have lately been trying Clark's patent water jacketed pipe for blowing air on the burning charge, and are now able to roast 12 tons of ore in 36 hours to 7 per cent. of sulphur, using three cords of wood.

The relative approximate cost of calcining at these three smelters would appear to be:

	Reducing to.	Cost per ton.
Anaconda	6 per cent. sulphur.	$ .57
Colorado	3 " "	4.06
Butte reduction works Bruckner cylinder	12 " "	2.03
Brunton "	10½ " "	2.00
Brunton cylinder in connection with Clark's patent	7 " "	1.50

GRANITE MOUNTAIN MINING COMPANY.—Superintendent Weir, of this company has informed the officials that in the upraise in No. 9 level, at 1,200 feet east of the shaft, he had come into a six foot vein that averages 176 ounces silver. Some of the assays ran nearly 600 ounces.

PHŒNIX MINING COMPANY.—On this property, which is reported to look splendid, work has been pushed from the turn loose, and the shaft, which is vertical and running on the lead, is now down to a depth of 190 feet. At present there is a stringer of ore of from 10 to 12 inches in width, which is gradually widening. The company on reaching a depth of 225 feet will cross-cut the lead to the south, as all appearances indicate that the main body of ore lies to the south, or hanging wall side. The stringers of ore in the shaft show that the lead dips from the perpendicular to the south on an average of about five feet to the 100. At a depth of 100 feet the vein showed a width of 28 feet. After the vein is cross-cut at the 225 station, the company's contract calls for 200 feet of levels, which will be pushed to completion at once.

THE BI-METALLIC MINING COMPANY.—This company has declared its first dividend; it is now earning $60,000 a month, and as it intends increasing the reserve each month, only $50,000 will be declared, or 25 cents per share, payable July 10. An officer of the company is authority for the statement that the Bi-Metallic is in a position to keep thsse dividends up regularly each month.

LEWIS AND CLARKE COUNTY.

IN TIME.—Frank E. Beck, at the instance of the Gould & Cramer people, has purchased from C. Milton Turner his one-half interest in this lode adjoining the Jay Gould. This constitutes the purchasers sole owners of the property. The consideration was $5,000. The In Time is a valuable acquisition to the G. & C. people, as it was necessary to the thorough development of their lode. It has already been opened out to a considerable extent.

MONTANA COMPANY, LIMITED.—A circular, dated London, June 24th, just published, states: The results of the operations of the mine from January 1st, 1890, to the present time, and an estimate of the company's financial position to the 30th instant, permit the directors to declare a further dividend for the current half year of three pence per share, free of income tax, payable on and after July 15th proximo, being at the rate of five per cent. per annum. The profits made would have permitted a larger dividend had it not been advisable to provide out of the revenue of the present half-year part of the cost of the new pumping engine, now ready for shipment. The expenses of the lawsuit with the owners of the Hopeful Lode Claim (referred to in the directors' last half-yearly report) have been very heavy, but the directors are glad to be enabled to state that judgment in this action has been given in favor of the Montana company upon all points. The following extract from the resident director's report, dated 21st ult., will show that the developments in the 1,000-feet level and at the north end of the workings, justify a favorable view of the prospects of the mine:

"Up to the present time I have not had much opportunity of making a close examination of the mine, but I have been all through the workings

below the 400-feet level with Mr. Robinson and Mr. Henley; and I find the developments upon the Empire lode and from the No. 2 shaft northwards presenting an appearance which would seem to justify to the fullest extent every word I said at the shareholder's meeting. In fact, had it been possible for me to control the developments in order to accord with the statements I then made, it would have been impossible for me to suggest anything which would have more fully confirmed what I then said, than the work which has been done during my absence.

"With regard to the Empire, until a connection is made with the Cruse level, which will consume another two months' work, it is not possible to do much development from the 400-feet level, as the ventilation there is not good by any means, and we cannot possibly operate more than two or three machine drills. But, as far as the drift has been advanced, it has opened up an ore body which is of considerable extent and of good average grade, and which justifies the opinion that the Empire Mine is going to prove a most valuable purchase. It is without question the most important discovery that has been made during the past three years; and I look forward with the very greatest expectation to the developments made in this direction during the next six months, placing at our disposal by the end of the year a large body of high grade ore. The 1,000-feet level from No. 2 shaft (northward).—The development on the new shoot encountered in this level (northward of the No. 2 shaft) is scarcely of less importance than that made in the Empire mine. The ore body has now been opened up for a distance of nearly 500 feet, and will average not less than three feet wide, from which assays varying from $10 to $90 per ton have been obtained, and the northern extremity of the ore body has not been reached. Although it is improbable that this shoot will go up for any great distance, as the vein in the 800-feet level was practically barren, we feel that we have every justification for looking for its continuance in the 1,200-feet level, which will be reached by the No. 2 shaft towards the end of July, and in which we shall be able to commence drifting some time in September. Should the developments in the 1,200-feet level prove this ore body to exist in equal proportions at that depth, it will again add a large tonnage to the ore reserves, and taken in conjunction with the Empire, will place us in a better position than we ever have been in the past."

THE LILLIAN LODE.—This old discovery on Walker Gulch, a tributary of Ten Mile, has never been developed to any extent. It is situated about ten miles southwest of Helena, and 400 yards from the Rimini Railroad. The ledge is owned by Jno. S. M. Neill and O. F. Schoenfeld, of Helena, and development work is now in progress. An assay of ore taken from the outcrop gave returns, it is reported, of $21.60 in gold.

SILVER BOW COUNTY.

This property, a near neighbor of the great Anaconda mine at Butte, is developed by a 275-foot shaft, and crosscuts and levels east and west of the shaft. W. A. Clark, who owns the property, recently leased it to six persons who propose to develop it still further, and take out some of the good ore known to exist in the levels. They are now pumping the water from the shaft, and although they have been at this work for the last seven days, there yet remains about 100 feet to be pumped out. This will take about 10 days more. A new hoist and boiler have been placed on the ground, and other improvements in the shape of an ore bin, tracks for the ore cars, etc., have been made. Up to the time the lessees took hold no work had been done for about 15 months, prior to which time the mine had produced many tons of high grade copper-silver ore. When silver and copper were low in price, however, it was closed down.

BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—Sealed proposals to sell this company's seven per cent. bonds will be received at the office of the New England Trust Company, trustee, No. 85 Devonshire street, Boston, Mass. Proposals will be opened and accepted bids declared July 25th.

(From our Special Correspondent.)

BOSTON & MONTANA CONSOLIDATED COPPER & SILVER MINING CO.—I am informed that the Montana Central Railroad has contracted to haul the ore from the mines of this company in Butte, to the new smelter in Great Falls, a distance of 173 miles, for 65 cents per ton. Unless the railroad is able to load both ways it will be unable to make expenses at this price.

NEVADA.

ELKO COUNTY.

NORTH BELLE ISLE MINING COMPANY.—At the annual meeting of this company held in San Francisco on the 25th inst., the following officers and directors were elected: E. Scott, President; F. A. Berlin, Vice-President; Thomas Bell, George W. Grayson and Thomas Brown, trustees; J. W. Pew, Secretary; Bank of California, Treasurer, and R. M. Catlin, Superintendent. The financial statement showed an indebtedness of $13,281.55.

STOREY COUNTY—COMSTOCK LODE.

CONS. CALIFORNIA & VIRGINIA.—The official statement of the ore worked and bullion produced on account of this mine for June gives the following figures: Total ore milled, 11,925 tons. Total bullion produced, $210,933, of which $106,167.69 was gold and $104,765.31 was silver. Average yield in bullion per ton, $17.68. Average assay value of the battery samples of the ore worked, $24.14 per ton.

NEW MEXICO.

GRANT COUNTY.

MITCHELL MINING COMPANY.—The Cora Miller mine on the Mangas, now owned and being worked by this company, is reported to be turning out well. A new shaft has just been sunk to 75 feet, where a body of high grade shipping ore has been developed. The superintendent, J. T. Mitchell, says that there will be sufficient funds in the treasury from the proceeds of high grade ore shipped last month to pay a dividend above all expenses.

PENNSYLVANIA.

COAL.

In Wilkesbarre, Pa., on the 1st inst., the Luzerne County Court handed down a decision in the case of the Mine Workers' Association of America against General Superintendent T. M. Phillips, of the Lehigh & Wilkesbarre Coal Company, who was charged with criminal negligence in connection with the recent Nottingham mine disaster, where eight men were burned to death. The case was instituted as a test, and the specific charge was involuntary manslaughter. The Judge discharged Mr. Phillips on the ground that the evidence at the hearing failed to show such negligence as would constitute criminal negligence.

DELAWARE AND HUDSON CANAL COMPANY.—Work was stopped on the 1st inst. at the Delaware Colliery, operated by this company at Wilkesbarre. The miners at this colliery notified their laborers that on and after yesterday a reduction in wages of 18 cents per day would be made. The laborers refused to accept the terms and went out. The price paid heretofore was $2 per day.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to June 27th, were as follows:

	1890. Gals.	1889. Gals.
From Boston	1,300,969	2,251,517
Philadelphia	62,684,023	63,307,395
Baltimore	4,209,965	1,782,077
Perth Amboy	6,797,955	9,494,105
New York	190,012,087	199,037,188
Total	265,004,999	275,872,282

SOUTH DAKOTA.

LAWRENCE COUNTY.

PLUMA CONSOLIDATED MINING COMPANY.—At the annual meeting of this company the following officers were elected: President, C. L. Gilcrest; Vice-President, J. S. Brown; Secretary, W. H. Gilcrest; Treasurer, J. S. Gilcrest; Superintendent, J. K. Gilcrest. It is reported that the new management has decided to erect a large tramway from the mines to the mill, on Whitewood near Gold Run, thereby avoiding the expense of wagon transportation. The company has in contemplation the erection of a new mill which will probably be one of 120 stamps or six times the capacity of present works. If negotiations now under way turn out satisfactorily, the work will soon begin.

PENNINGTON COUNTY.

HARNEY PEAK TIN MINING COMPANY.—This company is erecting a new hoisting works over the incline shaft of the Addie lode, located three and a half miles from Hill City in the direction of Harney Peak. Two sixty horse power boilers are in place. The shaft is down 120 feet, the bottom of which is reported to be in ore.

YANKTON COUNTY.

A press despatch says that a company of English capitalists has just purchased large tracts of chalk rock land near Yankton for the purpose of engaging in the manufacture of building cement. The capital represented is said to be $5,000,000.

UTAH.

NORTH AMERICAN ASPHALTUM COMPANY.—This company is shipping from four to five carloads of prepared asphaltum daily from the works on the Rio Grande Western. This all goes to St. Louis, where the company was organized, and is used for paving streets in that city. In the mine from which the rock is taken there is a ledge 9 to 11 feet thick underlying hundreds of acres. When crushed by means of stone breakers, etc., it looks like a mass of black sand, the grains being coated with asphaltum in the proportion of about 10 to 15 per cent. For paving, a small per cent. more asphaltum is added, and after being made hot in kettles is spread over the surface and smoothed down with hot rollers.

SALT LAKE COUNTY.

GERMANIA SMELTING WORKS.—The Germania smelter at Salt Lake is to have a new blast furnace, the three old stacks are to be replaced with new ones and the refinery enlarged and equipped with the latest improved plant. The improvements to be made immediately will cost $250,000.

VERMONT.

ORANGE COUNTY.

(From an Occasional Correspondent.)

COPPERFIELD, June 27.

COPPERFIELD MINING AND SMELTING COMPANY.—This company, formerly known as the Vermont Copper Company, at Vershire, having been started some two years ago, has been for more than a year under the personal management of Mr. O. K. Krause, its president. The mine has not been worked for over six years, and had been allowed to fill up with water. Two large Blake duplex plunger pumps were set up, and were to work for over ten months in pumping the shaft dry. The company's daily output has already reached over 40 tons of ore. It is driving several drifts now in the lower level, and has found excellent stoping ground in a vein 18 feet of highest grade ore, and a solid feeder vein of over six feet in the foot wall.

They are preparing to sink the shaft, which on an incline of 26 degrees now measures 2,450 feet from the landing. The mine is in charge of Captain Wm. Vague, and the dressing house is managed by Captain R. Barrett. To the large smelter consisting of 18 furnaces, the company has just added a 44-inch diameter water jacket, and is prepared for a largely increased output. The company owns over 1,700 acres real estate, some 120 buildings and tenements and employs at present about 150 men in mine and furnace, the concentration mill not having started running.

WISCONSIN.

BAYFIELD COUNTY.

Apropos of the recent discovery of copper mentioned in the ENGINEERING AND MINING JOURNAL for June 14th and 21st, the Ashland *Free Press* says: "Eleven miles west of Drummond is the spot where work has been commenced on the copper. The land is owned by Mell Tarr. It seems that an option has been secured of him by a stock company, recently organized, in which several Ashland people are interested.

"They are down with the present shaft about 30 feet, and are making preparations to sink another shaft about six rods distant. The specimens show up well. The vein of rock and formation is similar to that found at the Mass copper mine. The rock is a bluish gray. They have not yet got down to the solid rock formation. When they get down to that, the showing will probably be much better. The men who have the work in charge feel very confident of success. The country about here is worthy of study. Three streams run along on the top of a ridge into a lake that apparently has no outlet. They undoubtedly cut through deposits of hematite iron ore, as the water, although fed by springs, is of a deep reddish tint. One can stand off the streams and look up over natural levees. The streams all run north. The lake is filled with trout and the water there is very clear. It is stated that machinery has been started to continue the work."

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

REVELSTOKE, June 24.

(From our Special Correspondent.)

The Canadian Pacific Railway is now building a line about 28 miles long from Sproat's Landing to Nelson. It is pushed as rapidly as possible, and will, when completed, with the line of steamboats recently bought and constructed here, give us communication with Nelson, Ainsworth (or Warm Springs) and Hendryx, all promising camps. The Steamboat Company mentioned bought the "Kootenai," 150 tons, and has built a new boat, called the "Lytton," with good passenger accommodations, and of 150 tons carrying capacity. These boats ply between Revelstoke and Sproat's Landing, and will form part of the link connecting us with the lower country.

About a week ago I had occasion to visit the mining districts of Nelson, Warm Springs and Hendryx. I was very much impressed with the possibilities of the Warm Springs Camp. It seemed to me that for the amount of development done, the camp showed up better than any camp I have ever visited. I brought up about 100 samples from this district, which I intend to test. There is considerable activity at Nelson in the building line, the people there being evidently of the opinion that the mines will pan out all right. They have come to stay. The Hendryx property at Hendryx called the Blue Bell, is a very fine property. They are now driving a tunnel to see whether the remarkable surface showing will hold its own as depth is attained. They are now in about 800 feet, and Dr. Hendryx expects to strike the ore body within about 25 feet further. They have an air compressor and drills, and the work progresses rapidly. Even if the ore bodies should not go down, they have some thousands of tons in sight, in the five immense chambers of ore which come out to the surface. Should the extent of the deposit continue in depth, they will have a body of ore that may materially affect the lead market. The ore carries about 50 per cent. lead

and 15 ounces silver, result of carload shipment assay. The mine is magnificently located, the tunnel driven to tap the ore body being right at Kostenay Lake.

The government has appropriated some $4,000 for a wagon road to the mines at Warm Springs, and about $5,000 for a road from Nelson to Toad Mountain. The deficiency, in order to have the roads well built and extending to the best mines, will in each case be made up by the mine owners. It is expected that work on these roads will soon begin, as the appropriation becomes available in July.

Up here, our smelter, a first-class plant in every respect, is already constructed, and ready to start up as soon as a sufficient supply of ore can be secured.

At Illecillewaet they have begun work on the Lamark mine, and intend to expend about $15,000 in development. Very little is being done at present on the other mining properties.

At Golden they are building another smelting works, which will probably be completed early this fall.

POORMAN.—This property, about 6 miles from Nelson, has a very good showing of ore. A concentrating plant of 10 stamps (Cornish), and four "Triumph" concentrators, are being operated on the ore from the mine. At present they are mainly engaged in treating the free-milling ore by amalgamation, and are making but little concentrates; but as these free-milling ores only exist on the surface, and the ore becomes concentrating as soon as they get down a short distance, it is expected that eventually the stamp mill will be run on concentrates almost entirely. The concentrates will be iron pyrites, and as the gangue consists altogether of quartz, they will experience no difficulty in concentrating.

SILVER KING MINE (HALL).—At this mine on Toad Mountain, they have about 300 to 400 tons of first-class ore out and ready for shipping. They are now driving a tunnel to strike the ore body, and are now in about 30 feet. I think they expect to strike the ore in about 350 feet.

CANADA.

PROVINCE OF NOVA SCOTIA.

(From our Special Correspondent.)

COAL.

At Springhill the mines have been closed and the horses taken out, the men demanding that the system of not counting a box with stone in it should be discontinued, and that a certain scale of dockage should be laid down based on the percentage of stone in the coal. The miners did not avail themselves of the Mines' Arbitration Act, passed this year by the Provincial Government, but came out on strike. About 1,200 men are employed at these mines, and it is to be hoped that a settlement will speedily be arrived at.

In Cape Breton work continues brisk and the shipping piers are kept filled with vessels.

Judge Tremanie, of Baddeck, has opened a bed of specular ore four feet wide, of very high grade and showing only traces of sulphur and phosphorus. It is expected that New York parties will shortly ship a trial cargo.

GOLD.

The returns from Malaga, Queens County, for the past month show 259 ounces from 355 tons of quartz. Prospecting work is dull this season and no new discoveries have been reported for some time.

PROVINCE OF ONTARIO.

(From our Special Correspondent.)

PORT ARTHUR, June 30.

BADGER SILVER MINING COMPANY.—No. 2 shaft is now down 76 feet from the surface of the ground, 56 feet of which are on the vein. The vein has kept its width steadily for the last 30 feet. The silver is very regularly disseminated throughout its width, but the richest part is on the foot wall. Seven and a half barrels of high grade shipping ore have been taken out that will average 3,500 ounces to the ton. Some of it goes as high as 10,000 ounces. Not more than one-third of the vein has been taken down in the shaft; 40 tons of mill rock that will average 100 ounces to the ton have also been taken out of the shaft.

Drifts have been started both ways on the vein from the bottom of the shaft, besides an adit level is being run in to strike the shaft at that depth. The mill is running constantly on ore from No. 3 vein (Porcupine). Three shafts are at work on it in the lower level cleaning up and putting things in shape for active work. A first-class road has been built and slated from No. 3 to the mill. The force of miners has been increased to 135, and altogether the Badger is in a most prosperous condition.

BEAVER MINING AND MILLING COMPANY.—The concentrating mill is now in full blast night and day, running on a refuse dump left since 1887; it is low grade averaging about $30 per ton, principally leaf silver, very fine; it was not put through before owing to the Frue vanners not being able to catch it. Captain Hooper has invented a slow motion vanner capable of saving the finest leaf silver. His invention is giving entire satisfaction; it will be a great boom to mine owners, as it will enable them to save thousands of dollars worth of silver that would otherwise go down stream. The run of low grade ore is about exhausted, and they will begin July 1st on the high grade milling ore, of which they have 2,000 tons on hand, that will average $100 per ton. They are working ten stopes in the mine and can start fifteen more when the mill demands. They have been running the mill since the 16th inst., and have 10 barrels of concentrates, averaging $500 per ton. There is plenty of ore in sight and on the dump to run the mill for three years. The June shipment has not been made as yet, owing to pressure of business in starting the mill, etc..

MCKELLAR'S ISLAND.—The first shipment of baryta, amounting to 1,000 tons, was made on the 27th inst. to Buffalo, N, Y. This will be followed by regular monthly shipments of 1,000 to 1,500 tons each during the season of navigation. The baryta is of excellent quality, and the deposit is said to be the finest on the continent.

SILVER ISLET CONSOLIDATED MINING AND LAND COMPANY.—Mr. H. S. Sibley, of Detroit, and Captain Thomas H. Trethewey have returned from a visit of inspection made to the different properties owned by this company between Port Arthur and Maimose, on the north shore, and, judging from the specimens they brought back with them, they met with extraordinarily good luck. Several large specimens of grey copper, weighing from 5 to 7 pounds, were taken from a vein on the Maimose property that assayed 69 per cent. copper. This vein is 7 feet wide, and has a pay streak 4 inches in width of nearly solid grey copper, with considerable green carbonate on the sides. They also brought in some fine samples of yellow sulphuret of copper from another vein on the same property, assays of which gave a uniform result of 25 per cent. in copper. At Cape Gargantua they discovered a vein of hydrated black oxide of manganese 7 to 10 feet wide. It rises out of the lake and crosses a large island. The vein rises up like a dyke from 4 to 10 feet above the surrounding country rock. In many places the quartz is weathered out, and the manganese ore left standing. The manganese is on both walls of the vein, and a strong seam or band is distributed through the middle of it. The ore assays 45 per cent. metallic manganese. The importance of this discovery can be appreciated, when the quantity of iron already known to exist in this district is taken into consideration, on the Edwards Island location, nine miles east of Silver Islet. The old vein, on which some work was done in 1883-4, and out of which some very rich specimens of arsenical silver ore were taken lately, is 19 inches wide and dips east about 10 degrees. Capt. Tretheway and Mr. Sibley discovered a parallel vein 75 feet to the eastward, outcropping for 150 feet, and four feet wide, dipping westerly 40 degrees. It is expected that at the contact of these two veins a rich body of ore will be struck. Mr. Sibley left for New York on the 28th inst., where the company's head office is situated. On his arrival there the course of the company's future operations will be defined.

IRON.

ATICOKAU RIVER.—Capt. M. N. Garland has just returned from the Aticokau iron fields, where he has been with a party of surveyors and explorers taking up a tract of 3,200 acres of iron lands. He says the amount of iron exposed on the surface is beyond comprehension, unless it is seen, and wonders that it was not located years ago, situated as it is within easy distance of Port Arthur, and that when a railway reaches the deposits millions of tons can be mined annually, as the iron is above the level of the country in great quantity, showing clear up the face of bluffs 125 to 150 feet high and of the finest quality. It will require a railway 40 miles long to reach the deposits, from Fire Steel on the Canadian Pacific Railway. The railway freight to Port Arthur on this iron would be about 90 cents per ton. Four of the deposits taken up by him are described below with their assays.

No. 1 location consists of about 600 acres. The land is located along the strike of the lode. It has an outcropping of 1,500 feet in length and an average width of 40 feet. The formation is vertical. The bluff running through this location is 135 feet above the level of the country and the iron shows clear up to the top, carrying its full width. The low lying land, wherever uncovered on the lode for a distance of 1¼ miles, showed the same quality of iron. Assays from this deposit, by E. W. Rossman, Port Arthur, gave 70·8 per cent.; metallic iron silica, 1·70 per cent., and no other impurities in appreciable quantities.

No. 2 Location is situated immediately west of No. 1 and comprises 640 acres. The iron outcrops about 10 feet below the level of the river, and runs up the face of a bluff 100 feet high. The length of the exposed part of this deposit is about 1,000 feet. Capt. Garland uncovered for a width of 27 feet without finding either wall. This location is splendidly timbered with pine, spruce and tamarac. The river is 125 feet wide, 6 to 8 feet deep and has a fall on the length of this location of 125 feet, which would give it great capacity for water power for driving the necessary machinery for mining. Assays from this deposit by the Sharon Iron Company, of Sharon, Pa., were as follows:

	Per cent.
Metallic iron	68·76
Silica	1·41
Phosphorus	0·006
Sulphur	0·185
Titanium	0·00

No. 3 adjoins No. 2 on the west; the outcropping runs along the location for nearly half a mile. It is 75 feet wide, and, like the others, runs through a bluff 150 feet high. Assays from it by F. Hille, Port Arthur, gave metallic iron 67·75 per cent.

BLACK BAY DISTRICT.—This district is situated 25 miles east of Port Arthur, along the shore of the bay of that name. It is accessible by boat from any point on Black Bay or by the Canadian Pacific Railway, which runs through the district for its entire length. Several very rich lodes of silver-lead ore are known and located. Lot 8, abreast of McEachern Island, is being operated by Daniel G. Cash, of Duluth. The work is under the charge of Duncan McEachern. They drifted 190 feet into the bluff and then ran a cross-cut for a few feet, and struck the vein about 200 feet below the surface outcropping. The vein is 7 feet wide, solid ore, carrying 60 per cent. lead and 14 ounces silver to the ton of 2,000 pounds. The vein is in a strong trap dyke running clear across the property.

BONA VENTURA.—This property is situated about two miles west of Lot 8 and is owned by Port Huron capitalists. It comprises 400 acres and has three well defined silver-lead veins, and one quartz vein five feet wide, carrying $20 in gold and $2.20 in silver to the ton of 2,000 pounds. The main vein on the property outcrops for about a mile and gives assays as follows:

By E. N. Riotte, New York.	I. L. Phillips. New York.
Gold value, $57.77 per ton.	Lead, 60 1-10 per cent.
Silver. 15 43-100 ounces.	Silver, 3 ounces.
Lead, 26 per cent.	
Copper, 10 per cent.	

G. A. Mariner, Chicago.	Chicago Smelting and Refining Company.
Silver, 9 5-10 ounces.	Gold, 1 1-10 ounces.
Copper, 16 65-100 per cent.	Silver, 2 6-10 ounces.
	Lead, 34 per cent.
	Copper, 8½ per cent.

E. H. Chapman, Ph. D., Toronto.	
Gold, 17 dwts. 12 grs.	Lead, 47.56 per cent.
Silver, 2 ozs. 2 dwts.	Copper, 11.62 per cent.

A strong company is in process of formation to work this property, and it is expected that good results will follow. It is the intention of the promotors to commence vigorous operations, as they believe that the lodes will pay well for the silver and gold alone, to say nothing of the copper and lead.

OGEMA.—This property comprises 80 acres, and is situated about six miles west of the West Shore of Black Bay, in the Township of Dorian, it has a strong well defined vein four feet wide of nearly solid galena, carrying 60 per cent. lead and from 2½ to 24 ounces of silver to the ton. It is hoped that this very promising property will soon be placed under development.

The following mining men have visited this district during the past week: John C. Green, of Toronto; Alex McEwen, London, Eng.; Geo. A. Thompson, London, Eng.; C. A. Read, Milwaukee; Walter Read, Milwaukee; Geo. R. Wallace, Port Huron, Mich.; R. R. Paulison, Detroit; Capt. I. T. McAdam, Windsor; M. H. Kilgallan, Chicago; Wm. Bury, Chicago; Capt. Tracy, Gogebic Iron Range; Dr. Eastman, St. Paul; Chas. J. Johnston, Wallaceburg; W. Eastman, Hot Springs, Ark.; Capt. Williams, Kingston; W. J. Watt, Ottawa.

MEXICO.

LOWER CALIFORNIA.

TEPUSTETE IRON MINES.—M. D. King, superintendent of these mines at San Isidro, has ten men under him, and the force is shortly to be increased to 100. There are four parallel veins, all in one hill, and a crosscut 250 feet long is now being run to cut the two upper ledges. One of the ledges shows an outcropping over 1,200 feet long, and the quality of the ore is remarkably uniform. The ore in the crosscut has more variety, but it all carries a high percentage of iron. So heavy is the surface ore that shafts are of no avail, and the whole top of the vein must be uncovered to a depth of 30 feet. Blocks have been raised weighing five and six tons each. Samples of ore examined by the Swansea, England, Reduction Works were pronounced the finest character of iron, and the same was reported from works at Freiberg, Germany, and in Colorado. The facilities for shipping are first-class. No part of the mines is over one-fourth of a mile from high tide. A breakwater is already half built by nature, and the American Brake Company will do the other half.

MEETINGS.

Cascade Mountain Mining Company, at Crested Butte, Colo., July 8, at 10 A. M.

Best & Belcher Mining Company, at Room 39, Nevada Block, No. 309 Montgomery street, San Francisco, Cal, July 14, at 1 P. M.

Overman Silver Mining Company, at No. 414 California street, San Francisco, Cal., July 10, at 1 P. M.

Ruby Chief Mining and Milling Company, at Crested Butte, Colo., July 10, at 2 P. M.

Union Consolidated Silver Mining Company, at No. 414 California street, San Francisco, Cal., July 10, at 1 P. M.

DIVIDENDS.

Aspen Mining and Smelting Company, dividend No. 14 of 10 cents per share ($20,000, payable July 15th at No. 54 Wall street, New York. Transfer books close July 11th, and reopen July 16th.

Boston & Montana Consolidated Copper and Silver Mining Company, dividend No. 12 of $1.50 per share, payable on August 1st to stockholders on record July 7th. Transfer books close July 8th and reopen July 19th.

Caledonia Gold Mining Company, dividend No. 20 of eight cents per share ($8,000), payable July 15th at the office of Laidlaw & Co., No. 14 Wall street, New York City. Transfer books close July 8th, and reopen July 16th.

Columbus and Hocking Coal and Iron Company, coupon on first mortgage bonds due July 1st will be paid at the office of Chas. M. Whitney & Co., 96 Broadway, New York.

May-Mazeppa Consolidated Mining and Milling Company, dividend of one per cent., or $10,000, payable July 15th at Room 7, Patterson & Thomas Block, Denver, Colo. Transfer books close July 8th, and reopen July 16th.

Montana Company, Limited, dividend of six cents per share, payable July 15th at the company's office in London.

Tennessee Coal and Iron Company, semi-annual dividend of four per cent. on the preferred stock, payable on and after August 1st at the Hanover National Bank, New York City. Transfer books close July 17th and reopen August 4th.

Virginia Mining and Improvement Company.—The interest due on July 1 on the trust mortgage 6 per cent. bonds will be paid at the office of the Boston Safe Deposit and Trust Company, Boston, Mass., on and after July 1.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Best & Belcher	46	May 13	June 17	July 8	.25
Bodie, Cal.	16	May 21	June 25	July 16	.25
Big Hole Placer, Utah	....	May 28	July 2	July 21	.01
Challenge Con., Nev	6	May 14	June 17	July 8	.50
Con. New York.	3	May 22	June 26	July 17	.15
Con. Pacific	12	June 21	July 28	Aug. 20	.10
Crocker, Ariz	9	June 16	July 25	Aug. 15	.15
Dexter, Nev.	1	May 29	July 1	Aug. 1	.08
Found Treasure	6	May 22	June 26	July 18	.25
Hartshorn, S. Dak.	5	May 24	June 30	July 19	.00½
Holmes, Nev.	12	May 19	June 24	July 15	.25
Mayflower, Cal.	47	June 7	July 10	July 31	.30
Mexican, Nev.	....	May 13	June 18	July 9	.25
Occidental Con. Nev	6	Apr. 28	June 6	June 30	.25
Seg. B. & Mides.., Nev.	6	May 5	June 9	June 30	1.75
Silver King, Ariz.	3	June 9	July 17	Aug. 11	.20
Stanard Con., Cal.	3	June 2	July 15	Aug. 9	.50
Teirakoff, Cal.	4	June 9	July 26	Aug. 23	.01

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 25 and 26

NEW YORK, Thursday Evening, July 3.

The holidays are to blame this time for the quiet week just passed at the Consolidated Stock and Petroleum Exchange. Reports at the last moment say that the California market is advancing, a fact which causes some joy. So often have the spasmodic movements of the San Francisco stock market been construed into *bona fide* and enduring activity that a reaction will scarcely cause more than a slight disappointment. The Exchange has had but four days' work this week and consequently did not accomplish much. The usual rumors of a briskness soon to occur are once more afloat. "Coming events cast their shadows before," but events which take place in the mining stock market are exceptions to this. There is nothing tangible just now which leads to the belief that activity will soon be inaugurated. Yet it is passing strange to see the great confidence and faith of mining brokers in general. They almost unanimously think that we shall soon experience an era of lively doings in mining. This is no news to those who have followed the actions of dealers in mining stocks for the past few months. Always prophesying good times, never giving particular reasons why the said times should come to us. Generally smiling, and now and then growling at the dullness.

Through an oversight we neglected to announce last week that Ontario had declared a dividend of 50 cents paid on June 30. This week the stock was lightly dealt in at $45.25 to $45.50. Horn silver was sold at $3.20 to $3.40.

The copper stocks have once more returned to the exchange. We note sales of Allouez at $9 to $9.75. Huron sold 400 shares at $3.13. Boston & Montana shows a solitary sale at $67.50.

Of the Black Hills stocks Caledonia is firmer at $2. The company has declared the usual dividend of 8 cents per share payable July 15th. Deadwood Terra was not dealt in.

The Colorado stocks appeared to be favorites this week. Based on encouraging reports from the property, Little Chief has advanced to 37 cents. Between $3,000 and $3,500 of net bullion were remitted for June. The best record for some months past. This money was the royalty paid by the pessees. Another deal seems imminent in Freeland, which has advanced to 48 cents, and shows sales of 8,600 shares during the week at 39@48 cents. Leadville Consolidated was dealt in at 11 to 14 cents, with sales aggregating 6,200 shares. Robinson Consolidated shows but one sale at 40 cents. Silver Cord at 35 cents was neglected.

Of the California shares Bodie Consolidated shows an advance, sales of 80 cents being reported. Mono disposed of 500 shares at 50 cents. Standard opened at 12 cents and closed at 10 cents.

Quicksilver preferred has a solitary transaction at $43. The Common was not dealt in.

Astoria tells the old story of fair size sales at 4 cents. Sutter Creek opened at $1.35 and declined to $1.10, having disposed of 3,400 shares. Brunswick at 94@96 cents, is reported to have sold 4,000 shares.

Silver King was traded in to the extent of 2,609 shares, at from 17 to 20 cents.

Minnesota Iron Company sold 100 shares at $85.50 per share.

In the Comstock shares we note sales of Consolidated California and Virginia at $4.65@$5; Crown Point at $2.60@$3; Gould & Curry was not traded in; Hale & Norcross at $2.95; Yellow Jacket at $2.70@2.90; Alta was stationary at $1.35; Chollar at $3.75; Julia at 45@50 cents; Mexican at $3.70; Utah at $1.10@$1.25; Ophir at $4.50@$5.13; Bullion at $3.70@$4; Argenta at 16 cents; Savage at $3.80; Exchequer at $1@1.30; Scorpion at 35@40 cents: Comstock Tunnel at 14@18 cents.

An improvement is to be noted in the Tuscarora shares. Belle Isle opened at $1.30 and closed at $1.55, having disposed of 1,000 shares. North Belle Isle had a solitary transaction at $1.60. The election of officers of this company took place in San Francisco on the 25th inst., and resulted pretty much as the election of the North Commonwealth. The transfer agent in this city will be appointed shortly. Reference will be found in our mining news columns.

Phœnix, of Arizona, sold 7,400 shares at $1.25@$1.30 and was firm throughout the week.

San Sebastian shows sales of 500 shares at 25@30c.

El Cristo was traded in at 86c. We have been promised news of some importance from this company next week.

Rappahannock was not dealt in. The president of this company, Mr. J. A. McPherson, has gone to the property and will return shortly. As we understand it the property is not being worked at present.

Boston. July 2

(From our Special Correspondent.)

The interest in copper stocks the past week has largely centered in Kearsarge, which has advanced from $22½ to $34¼ on the reported finding of the Calumet conglomerate on the property, together with large buying orders from the lake. The strong, persistent buying of the stock is considered the best possible proof of the value of the find and if all that is said of it be true the stock will undoubtedly sell for much higher figures.

The situation of the Allouez warrants the belief that the same character of ore will be found on this property as on the Kearsarge, and there was good buying of the stock to-day which carried it up to $10¼. Centennial sold up to $40¼ at one time the past week, and back again to $38. The activity in Kearsarge helped the stock to-day, and sales were made as high as $39½. There is a good deal of the stock held on speculation, which prevents any rapid rise until the market is cleared somewhat. The value of this property is unquestioned, but as it has 80,000 shares while the Kearsarge has only 50,000, with 10,000 shares in the treasury of the company, many of the holders of the former are selling their stock in order to buy the latter. We look, however, to see it start before long, and it will look very cheap at $40 a few months hence.

Boston & Montana has ruled between $65¼ and $67½. A dividend of $1½ was declared to-day payable August 1st. The treasurer presented a statement showing balance of assets July 1st of over $1,000,000. It is stated that the company is making $2.50 per quarter, and it is probable the next dividend will be $2. The stock ought to sell at $75 on this showing. Calumet & Hecla has been rather heavy, selling down to $308, ex-dividend $5, and closing at $310. The output is now about 800 tons per week.

Atlantic sold at $25½@$26 and Franklin advanced to $24. Both of these stocks, with the present outlook, ought to sell much higher.

Osceola has been very quiet at $46½@$47¼.

Quincy declined to $119, but recovered to $125.

Tamarack sold at $210, and up again to $214.

The small producing mines have not been as active as they were last week, the large dealings in dividend-paying mines having absorbed the attention of buyers.

We note Arnold, after selling at $2½, declined to $1¾ to-day, but we hear nothing to warrant the decline.

Huron declined to $3, with later sales at $3⅝.

National extremely dull and inactive.

Both of these mines ought to be put upon a better basis. They have always been favorite stocks with Boston speculators, and are capable of being worked with profit at present price of copper.

The fancy list has been fairly active without any material changes. Aztec sold at 47½c., Dana at 50c., Hungarian at 60c., Humboldt at 45c., Native at 37½c., Star at 42½c., South Side at 37½c., Washington at 60@55c.

They will all undoubtedly sell much higher.

Santa Fe broke to 65c., the reports from experts at the mine not being considered very favorable.

Copper Falls sold at $11. The company suffers for lack of miners. The stock is very closely held and an order to buy several hundred shares could not probably be filled under $12.

Silver stocks continue to rule dull. Dunkin sold at 60c., Breece at 40c., Catalpa sold up to 50c. and back to 40c. again, Crescent at 19c.@20c. The market closes very steady.

By Telegraph.—Kearsage, $30; Allouez, $9.50; Boston and Montana, $66.25; Calumet and Hecla, $308; Tamarack, $212.50; Quincy, $125; Franklin, $23.75; Arnold, $2; Huron, $3.50; Atlantic, $26; Butte and Boston, $24.50; Santa Fe, 67½ cents.

(From an Occasional Correspondent.)

I have recently studied quite carefully the copper stock market here, and find that heavy stocks like Calumet and Hecla, Quincy, Tamarack and others, have been bought by *bona fide* investors, while the lighter stocks are more in the hands of speculators, ready to drop them whenever a few dollars profit show up, and pick them up again whenever the *mot d'ordre* is given. Thus to-day Kearsarge rose $5 a share, from $29¾@34⅜ and at the close of the exchange gave up 1½ to 33½ on realizations of day speculators. The reason for the rise was reported to me to be a statement by Capt. Daniel of a strike in the conglomerate, mentioned several days before but which he could not examine on account of the water; the mine captain, however, told him the two feet of ore were O. K. Hence $5 advance or $13 since June 26th.

Huron, having a steady output of copper, quoted 3⅝c., adding $5 assessment, equal to 8⅜, 40,000 shares and the indebtedness being paid with the assessment.

Allouez quoted 9¾, 80,000 shares, with good chances for profit while the price of copper keeps up.

The Butte & Boston control has been passed from D'Gown's hands into Bigelow's hands, and some people already dream of a consolidation of Boston Montana with Butte & Boston. The stockholders of the latter would certainly lose nothing by it, neither would the promotors and organizers, and the small fry might catch a few bites, too. About Santa Fe nobody seems to care just now. Lewisohn, who owns one-fifth of the stock is in Europe to restore his health, and Evans, who owns another fifth needs all his time for his banking business. The other directors have hardly any stock, therefore no special interest in the welfare of the company, though a few people claim that a New York house is quietly buying for one of these directors whatever is thrown on the market.

Sure enough several excellent reports from mining experts have not been published, and I hear from good authority that work could be resumed and plenty of copper produced very cheap, even for the time being, without concentration works. It is remarkable that a concentrator should be ordered from Europe, while we have the best facilities for machinery works of this kind in our own country.

Butte.

At a meeting of the trustees of the Butte Mining Exchange, held in that city on the 25th ult., the following officers were chosen: M. L. Holland, president; J. A. Lewis, vice-president; W. N. Viguers, caller or chairman; A. J. Johnson, treasurer. The governing board of twelve is as follows: William N. Viguers, James B. Leahy, Charles S. Warren, J. Chauvin, Green Majors, W. C. Lawlor, B. W. Evans, F. P. Gable, John Cannon, D. B. Nincent, J. A. Lewis, C. E. Gable. Arbitration committee, John H. Curtis, D. J. Hennessy, J. E. Rickards, James Dingevon, H. C. Corney, C. F. Booth, M. B. Brownlee. The committee on selecting stocks to be listed made the following report: "We, the committee appointed to recommend mining stock for listing on the Butte Mining Exchange, beg leave to present the following: Alps, American Ruby (Oro Fino), Champion (Oro Fino), New State; Cleveland & Anchor, Combination, Glengary, Hiawatha, Iron Mountain, Lion (Oro Fino), Milwaukee, O., R. & N., Poorman Extension, Southern Cross, Volunteer, Fourth of July, Princess, Phœnix, Emma Nevada, Robert E. Lee, Red Lion, Copper Bell, Silver Crown, Poorman, D. L. M. & Smelting Company, Great Canada, Fourth of July, Butte, Tuscarora, Boston & Montana, Butte & Boston, Deer Lodge Mining & Reduction Company, West Granite, Alice, Moulton, Granite Mountain, Bi-Metallic, Argentine, Elizabeth, Montana Fire Clay, Flint Creek, Hope, Muldoon, Golden Gate, Keystone."

Denver. June 30.

(From our special correspondent.)

Market steady, firm and improving, the hot weather during the week not detracting any interest from sales, and creating an advance in prices, noticeably in Rialto, May Mazeppa, Oro and Matchless. Holders of stock are growing cautious and are patiently waiting the issue of developments now in progress in nearly all of the listed properties, most of which are systematically and economically doing their work, desiring and hoping for dividends to the many and various in-

vestors. The receptions and entertainments given to members of the T. P. A. A., who held their annual convention here, and to King Rex and his party from New Orleans, were of that well known western character, kind, genial and beneficial, reflecting great credit upon our city and the Mining Exchange. The ground for the new Exchange Building, will soon be cleared, and bets are offered, few takers, by President Taylor, that they will occupy it by January 1st next. It will be one of the finest, and any city might well be proud of it.

The outlook for the exchange, its members, the listed properties, output of ores, the smelters and the mines and miners never was more promising for the good of the State than at present. Square dealing is bringing it about and Colorado will soon be No. 1—front rank, without any question.

Prices and sales during the week ending June 28th, 1890:

Company.	Opening.	H.	L.	Closing.	S.
Alleghany, Colo	14	24	14	23	9,900
Amity, Colo	06½b	07	06b	07	8,300
Bangkok, C. B., Colo	09¾	11½	10½	10½b	1,200
Bates-Hunter, Colo	43b	45	42	42	7,960
Brownlow, Colo	12½b	14	13	14	2,500
Calliope, Colo	40b	41	41	39b	100
Cash	32	36	32	36	2,000
Clay County, Colo	32½	38	32 ½	37	6,100
Hard Money, Colo	07b	07	07	05b	100
Little Rule, Colo	52b	52	52	51b	1,700
Matchless, Colo	150b	225b	100b	225b	.....
May-Mazeppa, Colo	74	77	73	75	25,600
Mollie Gibson, Colo	60a	100a	60a	60a	.....
Oro, Colo	450b	450b	425b	450b	.....
Pay Rock, Colo	07	*08½	07	08	18,300
Puzzler, Colo	20b	20	20	19b	800
Reed-National, Colo	74	75	72	73	2,100
Running Lode	21	21	20	20½	4,900
Silver Cord, Colo	40a	40a	40a	40a	.....
Whale, Colo	30b	33¼	33	32b	1,100
PROSPECTS.					
Argonaut, Colo	14b	18	12½	18	7,300
Aspen United, Colo	10¼b	10½b	10b	10¼b	.....
Big Indian, Colo	10b	11½	10	11½	1,900
Big Six, Colo	11b	11¾	10	10	2,700
Claudia J., Colo	0 6½b	07½	06¾	07½b	800
Nat. G. & Oil, Colo	22b	27	22	27	2,950
Diamond B., Colo	07b	08½	06½	08½	4,500
Emmons, Colo	17½b	*23	17¼	20	2,000
Golden Treasure, Colo	15½b	16½	15½	16½	1,200
Ironclad, Colo	22	*28	22	26	12,100
John Jay, Colo	11½	*14½	12	13½	5,200
Justice	13b	15	15	15	800
Legal Tender, Colo	05b	05½	05	05b	2,200
Morning Glim, Colo	50b	50	50	50b	400
Potosi, Colo	16	*21	16	19	5,300
Rialto, Colo	58	*70	58	64	19,100
Total for the week					161,050

*Buyer 30 days †Buyer 60 days. ‡Seller 60 days.
§Seller 30 days. a Asked. b Bid.

Kansas City. June 26.

Company.	Opening.	H.	L.	Closing.	Sales.
Argonaut	15†	15	15	15	100
Bates-Hunter	39½	41½*	39	39½	9,900
R'g Six	8†	9	9	9	650
Brownlow	30†	..	..	..	.....
Cash Gold	28	28½	28	28½	8,100
Clay County	15†	35‡	..	..	.....
Diamond B	6	7*	6	7	2,000
Hard Money	5¼	5¼	4½	5	12,700
Iron Clad	21	21	21	22½‡	500
King Jack	5†	75‡	..	..	.....
Little Nugget	78½	78½	76†	77‡	500
Little Rule	49†	51*	49†	51*	100
May Mazeppa	69½	70	69½	69½	9,400
Minnequa Zinc M. Co	25½	27*	25½	25½	8,200
Monte Cristo	3½	7*	3	6	3,100
Morning Glim	50	52*	49½	50	5,500
Pay Rock	7†	9‡	..	9‡	.....
Pelican	27½	30*	27½	28	4,000
Potosi	9	10	9	10	300
Sylph	..	..	..	..	.....
Total					65,600
Pit sales					.....

† Bid. ‡ Asked. * Buyer 30. § Seller 30.

Minneapolis. July 1.

Company.	Bid.	Asked.
Algoma	.55	$1.00
Badger Silver Mg. Co	6.25	7.00
Bessemer Consol. I. M. Co	.15	....
Big Ox Mg. & Rec. Co	....	....
Black Hills Tin M. Co	1.25	1.50
Canada G. Mg. Co	....	1.00
Crescent I. Mg. Co	....	2.50
Deer Lodge Mg. & Sm. Co	....	....
Derwood Con. Mg. & M. Co	....	....
Dot Iron Mg. Co	....	1.50
El Dorado I. Mg. Co	....	1.00
Fairview S. Mg. Co	.35	.50
Glengary S. Mg. Co., Mont	....	....
Gogebic Iron Co	2.00	3.50
Iron Duke Mg. Co	....	....
Kakabeka Mg. Co	.60	1.00
Keystone Mg. Co	.15	1.00
North Pabst I. Mg. Co	.12½	.16
N. W. Coal Mg. Co	....	3.75
Phoenix Iron Works	32.50	36.00
Rochester M. & M. Co	.12½	.25
Silver Arrow	.09½	.10
Silver Crown Mg. Co	....	.30
Silver King Mg. Co	....	1.00
Thunder Bay G. & S. M Co	....	1.00
United Iron & Land Syndicate	....	3.00
White Spar Mica Mg. Co	1.75	2.00

* Actual sales.

Lake Superior Iron and Gold Stocks.

(From an Occasional Correspondent.)

Your journal of the 28th June is before me and I again notice quotations from Houghton, Mich., also from Minneapolis Mining Exchange containing a few errors, as follows: Champion Iron Company, $95 asked. I am offering it at $90. Chapin offered at $33. It probably could not be bought for three times that figure. Chicago & Minneapolis Ore Company offered at $112. I am paying $115. Michigan Gold quoted buyers $1.25. I have for the past two weeks offered this stock at 70@75c. without finding a buyer, and Ropes at $2.25 with no buyers. Minneapolis quotes Bessemer Consolidated at $2. If they mean the stock I will sell it at 10c. a share, if the Consolidated bonds, I offer them at 20 per cent. They quote the United Iron and Land Syndicate $3. I will sell 1,000 or 2,000 shares at 5c. per share.

Now this may cut no figure with your readers; I only give you the facts. The extreme hot weather affects iron stocks the same as it does general business. Brotherton is easier, sellers at $3.25 with buyers at $3@$3.10; Gogebic iron reported seller 45c.; buyer, 40c.; Iron Belt, $1.25; Odanah, $18; Sec. 33, $11.50; Anvil, $3.73 bid; sellers, $4.

(Special Report by David M. Ford, Houghton, Mich.)

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co	$25.00	$55.00	$65.00
Aurora Iron Co	25 00	7.50	8.00
Champion Iron Co	25 00	85.00	95.00
Chandler Iron Co	25.00	37.00	38.00
Chapin Iron Mining Co	25.00	30.00	33.00
Chicago & Minn. Ore Co	100.00	110.00	112 00
Cleveland Iron Co	25.00	18.00	18.50
Germania	25.00	11.50	12.00
Jackson Iron Co	25 00	110.00	....
Lake Superior Iron Co	25 00	70.00	75.00
Milwaukee Iron Co	25.00	5.50	6.50
Minnesota Iron Co	100.00	84.00	86.00
Montreal Iron Co	25.00	8.00	9.00
Norrie (Metropolitan)	25.00	65.00	68.00
Odanah Iron Co	25.00	20.00	22.00
Pittsburg Lake Angeline Co	25.00	175.00	180.00
Republic Iron Co	25.00	42.50	43.50

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co	....	....	....
Grayling Gold & Silver Co	$25.00	....	....
Michigan Gold Co	25.00	$1.25	1.50
Peninsula Gold & Silver Co	25.00	.50	....
Ropes Gold & Silver Co	25.00	2.25	2.50

* Actual sales were made at these prices.

San Francisco.

The following amendment to the by-laws of the San Francisco Stock Exchange has been unanimously adopted: "The fee for placing mining stocks on the regular list shall be $500 each, and no stock shall be bought or sold at any of the sessions of the board unless the same shall have been approved by the Stock List Committee and regularly listed. This board reserves the right to suspend the calling of any stock, at any time, by a two-thirds vote of the members present. All mining stocks remaining on the list over one year shall pay $100 per annum in advance. And the said annual fee shall become due on the first day of January, and any stock upon which said fee shall remain unpaid on the third Tuesday in February shall be stricken from the list by a majority vote. No stock so stricken from the list shall be replaced except by the payment of a fee of $500, as hereinbefore provided, and reference to the Stock List Committee."

St. Louis. July 1.

(From our Special Correspondent.)

It is owing in a great measure to the hot weather that trading was not as brisk as usual on the Mining Exchange floor. In fact the falling off in business was so noticeable that the discontinuing of the afternoon call is being seriously considered. Despite the hot weather, however, a few stocks continue to thrive and grow in favor quite actively.

The Little Albert is looking well and the ore is reported as holding out strongly. Though the vein is growing narrower, the loss in quantity is counter-balanced by the increased richness of the ore. The treasury stock has been in active demand lately. Purchases amounting to 14,000 shares have been made at the fixed price of 25. The United States Assay Office paid $800 for the last gold retort received from this mine. Its last shipment was a car load of 470 sacks of ore.

There is no doubt about the favorable standing of Mickey Breen. Opening Wednesday at $1.12½, it steadily mounted to $1.32½, and when the reaction set in it amounted to but $0.02½. While at $1.32½, 800 shares were sold.

Adams had a boom this week, reaching the top notch in price for this year. It sold for $1.07½ on Thursday and was in great demand.

A recent report from the superintendent of the Mountain Key, stated that the mine was doing well, but due to to the cross-cutting to the old vein, considerable dead work was being done. The water supply is reported as more than sufficient to run the ten stamps now in use.

Small Hopes had a good run during the week. Rumor has it that a 10c. dividend is soon to be declared. The stock was quoted at 96¼c.

Ivanhoe made its appearance on the market after a long absence and sold at 10c.

The trustees of the Granite Mountain held a meeting Wednesday, June 25th, and declared the regular monthly dividend of $200,000, or 50c. per share.

The Major Budd was sold on June 30th to satisfy a $15,000 claim against it, held by the Montana National Bank. J. J. Mullally, of this city, took a trip to Montana to try and effect some compromise between the resident stockholders and those of this city.

Of the 406,000 shares, 110,000 are held by St. Louis parties. The St. Louis people were willing to advance 4½c. per share on the stock to pay off the debt, but the other stockholders refused to settle on that basis, hence its sale. Arrangements will be made, however, to redeem the property, which, by the laws of Montana, is open to redemption by the stockholders for the six months succeeding the sale.

Prices and sales during the week ending June 28th:

Company.	Opening.	H.	L.	Closing.	Sales.
Adams, Colo	$1.00	$1.07½	$1.00	$1.02½	1,400
American & Nettie	1.92½	2.00	1.80	1.30	185
Bi-metallic	30.00	....	....	30.00	....
Buckskin	.07½	.20	.07½	.11	300
Central Silver	.12½	.13	.12	.12	3,500
Cleveland, Colo	.05	....	....	.02	....
Golden West	.03	....	....	.03	....
Granite Mountain	44.00	....	....	44.00	...
Hope	2.30	....	....	2.20	....
Ivanhoe	.09½	.10	.09½	.10	300
I. X. L.	.03½	.03½	.02½	.03	100
Ingrain	.25	....	....	.10	....
Keystone	.01½	....	....	.01½	....
Lake Union	12½	13½	10	10	7,200
Little Albert	23¾	25	23½	25	.....
Major Budd	6	8	6	7½	3,200
Mickey Breen	1.20	1.32½	1.12½	1.30	4,000
Mountain Key	32½	32½	30	30	100
Pat Murphy	14½	15	13½	14½	1,500
Silver Age	1.65	1.75	1.50	1.55	25
Silver Belle	6	....	....	6	.....
Small Hopes	93¾	96¼	90	90	200
Tourtelotte	1½	....	....	1½	.....
West Granite	1.00½	1.07½	1.00½	1.05	.....
Wire Patch	15	....	....	15	.....
Yuma	47½	53¾	47½	51¼	400

Salt Lake City. June 28.

Company.	Bid	Asked.
Alice, Mont	2.80	....
Anchor, Utah	....	4.40
Alliance, Utah	2.15	2.25
Apex, Utah	.20½	.21
Barnes, Utah	.13½	.14
Big Camas, Id	.72½	.77½
Crescent, Utah	.35½	.36
Cent.-Eureka, Ut	....	20.50
Daly, Utah	22.00	22.50
Glencoe, Utah	1.30	1.50
Horn Silver, Utah	3.00	....
King of West, Id	.50	.70
Mammoth, Utah	4.35	4.40
Malad Con., Id	.13	....
Northern Spy	2.70	2.80
Ontario, Utah	....	....
P. C. M. Co., Utah	....	....
Rochester, Utah	....	....
S. L. L. & P. Co., Utah	....	....
Utah L. & C. Co., Utah	....	....
Woodside, Utah	....	....

PIPE LINE CERTIFICATES.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
June 28	86⅞	86⅞	85¼	85½	96,000
30	86	87	85½	85⅞	106,000
July 1	86	86	85⅞	85⅞	55,000
2	86	89	86	89	152,000
3	89	89½	88¾	89½	49,000
4*	..	....	....	....	.....
Total sales in barrels					458,000

*Holiday.

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
June 28	86¼	83¼	85⅜	86	35,000
30	86¼	87⅛	85⅜	86	53,000
July 1	87	87⅛	86⅜	87⅛	74,000
2	86⅞	90	86⅞	90	55,000
3	89¾	90⅛	89½	90⅛	34,000
4*	..	....	....	..	.....
Total sales in barrels					251,000

*Holiday.

COAL TRADE REVIEW.

NEW YORK, Thursday Evening, July 3.

Statistics.

Mr. John H. Jones, chief of the Bureau of Anthracite Coal Statistics, furnishes us the following statement of shipments of anthracite coal (approximated) for the week ending June 28th, 1890, compared with the same period last year:

Regions.	June, 28, 1890.	June 29, 1889.	Difference.	
Wyoming Region	Tons	441,674	435,665	Inc. 6,009
Lehigh Region	"	132,271	137,514	Dec. 5,243
Schuylkill Region	"	264,199	229,824	Inc. 34,375
Total		838,144	803,003	Inc. 35,141
Total for year to date		15,186,422	15,147,201	Inc. 39,221

PRODUCTION OF BITUMINOUS COAL for week ending June 28th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R.	3,443	65,237	39,838
Cumberland, Md	71,673	1,778,177	1,439,792
Barclay, Pa	2,961	70,690	53,503
Broad Top, Pa	9,271	254,852	162,379
Clearfield, Py	76,415	1,924,085	1,420,592
Allegheny, Pa	24,337	661,328	405,777
Beach Creek, Pa	37,207	910,948	579,047
Pocahontas Flat Top	35,990	925,455	755,530
Kanawha, W. Va	32,724	1,002,631	744,334
Total	287,821	7,593,433	5,593,783

WESTERN SHIPMENTS.

Pittsburgh, Pa	14,551	436,385	280,026
Westmoreland, Pa	11.251	713,828	656,863
Monongahela, Pa	16,221	193,682	139,507
Total	42,023	1,343,895	1,076,396
Grand Total	329,844	8,937,328	6,670,179

‡ Estimated.

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending June 28th, and year from January 1st, in tons of 2,000 lbs.: Week, 90,012 tons; year, 2,679,768 tons; to corresponding date in 1889, 2,178,618.

Anthracite.

There is a good deal more discussion of the past and future than of the present condition of the hard coal market now that the summer solstice is almost upon us. As a matter of fact, there is very little coal market to trouble any one. The greater part of the operators and middlemen are starting off on their vacations, and have given up any expectation of a revival before the regular fall trade sets in. But the exceeding dullness is noticeable, though the real, rock-bottom cause is not far to seek. Up to July 1st the output is calculated to have been about 1½ million tons more than the market called for. That over supply is in stocks now, and clogs the way; with that coal where it should be, viz., in the mines, business would be brisk, trade firmer, and prices higher, if not as high as the July prices of 1889 and 1888. The full effect of that over production is felt in the slowness of orders at June rates and the general belief that it will be longer than usual before July prices are reached. So slow are buyers just now that many of the middlemen say they might as well shut up shop were it not for old orders.

The certainty felt in May of a June rise resulted in a certain eagerness on the part of buyers. The slight doubt about a July rise, together with the stocks on hand and the amount bought at April and May rates for future delivery, makes the outlook for July business rather unfavorable. The producers keep on producing, however, and find little difficulty in moving coal forward.

Perhaps the market may better be described by saying that during this and next week most of those concerned have determined to let it take care of itself.

Pea and Buckwheat continue weak—perhaps at their weakest—at prices leaving a margin over cost, which sellers find no inducement to make them look for business.

The following are f. o. b. prices, New York harbor for free-burning coals: Stove, $4; egg, $3.75; broken and chestnut, $3.65; pea, clear free-burning, $2.50 f. o. b.; other grades, 10 cents to 30 cents less; buckwheat, $1.60 to $1.80 f. o. b.

Bituminous.

The soft coal is a little weaker than at the date of our last report, which is, perhaps, seasonable. Stocks are certainly increasing to that point which must produce an effect on prices but for the labor troubles at several of the soft coal mining regions. The threatened trouble at the Eureka mines in the Clearfield region has blown over. The men gave the Berwind-White Co. until July 1st, to accede to a demand for a rise on a 10 per cent. basis. July 1st has passed and the men have made no further demonstration than to hint that the trouble is delayed until the fall, when an attempt will be made toward a general movement.

At present the output is about equal to the demand. If there is any difference it is rather against than in favor of good prospects, or else, with the output not increased, and the stocks increasing, it is becoming evident that consumption has fallen off a little. However, as there is considerable reticence about the labor trouble and a great deal of doubt and delay about reliable reports from the mines, it is on the cards that the stocks may keep on increasing for sometime to come, as a preparation for fall strike emergencies. Coal is moving a little slowly overland as cars are somewhat scarce, but shipping is easier to Boston and Philadelphia. From Baltimore to Boston the week has ended in a reduction of 10 cents, present ruling prices being $1.15 per ton to good places and $1.20 to bad places. Philadelphia freights have dropped 5 to 10 cents a ton and vessels are now plenty and rates correspondingly weak.

While some aver that they cannot get coal forward quick enough, there is not, as a matter of fact, any new business doing. Contracts hold out well, and that is about all that can be said in favor of the market.

Prices remain unchanged: Baltimore, $2.40@$2.50 f. o. b.; Philadelphia, $2.50@$2.60; in New York har, $3.25; alongside, $3.50.

Boston. July 4.

[From Our Special Correspondent.]

The market for anthracite coal is without marked change. New business is light and no trade of any account can be expected from the New England market at present. The inland towns in Massachusetts and New Hampshire are well supplied. In fact very many retailers bought heavily when coal was so low, say $3.50 to $3.60 f. o. b. at New York for stove sizes and they have found distributing trade very dull. Unless the restriction of the companies is more effective than it has been thus far it would not be at all strange if the market lost strength in July rather than gained any. There is a little business from retailers in close proximity to this port who are not so heavily stocked as those in the interior, but all told the wholesale movement is small and will continue light until consumers begin to fill up their bins.

There have been several cargoes sold on this market at exceedingly low prices in the past week or so, in order to save demurrage. There is not much coal afloat now, however, and the market is not disturbed from this cause.

The bituminous situation is featureless. Deliveries are large. No one is urging coal for sale, and it would be useless to do so, as there are very few, relatively, who can take on any more coal than they have already ordered. The f. o. b. rates range from $2.25@$2.40.

Freights are easier. At New York large vessels have been chartered at 70 cents and at Philadelphia the situation is quotable at 95c.@$1. The principal change has been at Baltimore where vessels have been chartered at $1.20, so that the usual relation of Baltimore to Philadelphia freights is more nearly restored. Freights to Portsmouth, N. H., and some Maine ports are as low as to Boston at present, because vessels are going East for ice for return cargo anyway, and had as soon go to Portsmouth or further down the coast as to Boston. This is tending to decrease somewhat the amount of coal shipped to New Hampshire over the Boston & Maine Railroad from Mystic wharf, and may tend to lessen demurrage charges there, although the railroad had more than it could handle last week.

There is a saving of at least 25 cents a ton on much of the coal sent into New Hampshire by shipping it to Portsmouth in place of Mystic wharf and thence over the Boston & Maine, but this advantage will probably cease when the ice freighting business slackens.

The local retail movement is still slack, though showing some signs of improvement now that the vacation season is upon us, for many are in the habit of taking on their season's supply before closing their house for the summer. Prices are somewhat unsettled, but there is no severe competition as yet.

The receipts of coal at this port for the week have been as follows:

	For the week		For the year	
	1890.	1889.	1890.	1889.
Anthracite (tons)	41.721	45,533	714,910	605,506
Bituminous "	20,092	16,478	451,685	495,130
Total	61,813	62,011	1,166,595	1,100,636

Buffalo. July 2.

(From our Special Correspondent.)

The price of anthracite coal was advanced yesterday 25 cents per gross ton on cars, free on board vessels and to dealers at Suspension and International Bridges for shipment west. Retail rates unchanged. Trade dull.

The quotations are:

Size.	Per 2,240 lbs. f.o.b. vessels Buffalo.	To dealers on cars at Buffalo. 2,240 lbs.	To dealers on cars at bridges for shipment west. 2,240 lbs.
Grate	$4.55	$4.25	$4.25
Egg	4.80	4.50	4.50
Stove	4.80	4.50	4.50
Chestnut	4.80	4.50	4.50

Retail prices per 2,000 pounds: $4.50 for grate, $4.75 for egg, stove and chestnut, and $3.75 for pea delivered.

There is a strong feeling of antagonism at the measures adopted at the last meeting of the sales agents, whereby an increased output will be in order during July. "The proper place for coal is under the ground until it is wanted," says a prominent dealer and shipper; "not above ground on cars, yards and every conceivable dumping place, demoralizing trade and playing the deuce generally."

Bituminous coal fairly active and quotations steady at unchanged figures.

Coke quiet and steady.

Here is another specimen of biddings which were announced for the supplying of coal for the Police Department of our city for 1890-91:

Roedtke Bros., egg, stove and nut coal, $4.75; grate, $4.50; kindling free.

Klein & Albs, grate, egg, stove, nut, $4.75; No. 4, $5; soft coal free.

Charles T. Hall, from July 1, 1890, to April 30, 1891, grate, $4.50; egg, stove and chestnut, $4.75; soft coal free; anthracite coal, $2.75 for May, 1891.

James Hanrahan, grate coal, $4.50; egg, stove and chestnut, $4.75.

Joseph E. Gavin, grate, $4.50; egg, stove and nut, $4.75; soft coal and slabs free; coal for May, 1891, $2.00.

John L. Schwartz, chestnut, stove and egg, $4.75: grate, $4.50; No. 4 coal, $5.

Thomas Loomis & Co., grate, egg, stove and chestnut, $4.09; Hillside Coal and Iron Co.'s mines.

John Brendel, grate, stove, egg, nut, $4.75; No. 4, $5.

Like the bids published in last issue, no conclusion was arrived at after considerable discussion and the matter was postponed until next week.

Work has been commenced on the new retail trestles for the Delaware, Lackawanna & Western Company, one at Black Rock and the other at East Buffalo; capacity, 1,000 tons each.

The Buffalo Natural Gas Fuel Company has completed the laying of another pipe into Pennsylvania, and has given notice that all houses in the territory now occupied can be supplied. About 2,000 families are consumers at present.

Mr. Allen W. Horton, formerly with the Lehigh Valley Coal Company, of this city, has been appointed agent at St. Paul, Minn., of the Silver Creek & Morris Coal Company. For some time past Mr. Horton represented the Lehigh Coal and Iron Company, at Superior, Wis.

Lake freights quiet and strong. The shipments of coal from this port by lake, from June 26th to 30th, both days inclusive, aggregate 38,730 net tons, viz.: 9,740 to Chicago, 14,660 to Milwaukee, 2,650 to Toledo, 7,400 to Superior, 150 to Bay City, 800 to Green Bay, 500 to Owen Sound, 500 to Detroit, 1,000 to Gladstone, 280 to Oscoda, and 1,050 to Hancock. Total thus far this season, 596,970 net tons, including 43,800 net tons shipped in vessels clearing from Tonawanda. The rates of freight were: 60c. to Chicago and Owen Sound; 50c. to Milwaukee, Hancock, Green Bay and Oscoda; 45c. to Portage and Gladstone; 40c. to Duluth, Superior, Port Huron and Saginaw, and 30c. to Toledo and Detroit. Coal receipts by canal, fourth week in June, 530 net tons; shipments, 663 net tons.

Statistical.—Railroad receipts and shipments at this port are not reported, by request. Receipts of coal by lake thus far this season, none. Shipments by lake westward for month of June, 242,960 net tons, as compared with 265,330 tons in 1889 and 398,860 tons in 1888; for season to July 1st, 596,970 net tons, as compared with 625,000 tons in 1889 and 798,000 tons in 1888. The receipts of coal by canal for month of June, 1,547 net tons, as compared with 16,838 tons in 1889 and 19,645 tons in 1888; the shipments, 1,381 net tons, as compared with 873 tons in 1889 and 1,622 tons in 1888. The total receipts of coal by canal this season to July 1st, 2,514 net tons, as compared with 19,940 tons in 1889 and 20,821 tons in 1888; the shipments, 1,603 net tons, as compared with 1,716 tons in 1889 and 2,333 tons in 1888. The aggregate shipments westward by lake show a falling off this year of 58,630 net tons, as compared with the figures of 1889. Canal movement also smaller.

The shipments of coal by lake from Buffalo thus far this season to July 1st were distributed about as follows:

Buffalo to—	Net tons.	Buffalo to—	Net tons.
Chicago	232,410	Marquette	3,500
Milwaukee	105,160	Sheboygan	650
Toledo	29.410	Marine City	920
Racine	17,560	Port Arthur	900
Green Bay	6,200	Sault Ste. Marie	900
Saginaw	5,300	Sheboygan	1,000
Kenosha	2,900	Windsor	650
Menominee	600	Michigan City	1,150
Detroit	12,700	Alpena	500
Ashland	1,150	Oscoda	280
Hancock	1,050	Owen Sound	500
Washburn	7,700	Charleroix	100
Duluth	42,640	Vessels from Tonawanda not reporting at "Custom House"	43,860
Superior	65,100		
Gladstone	9,580		
Bay City	1,100		

Lake freights hence during June were as follows: To Chicago, 60c.; Milwaukee and Green Bay, 50c.; to Lake Superior ports, 35@40c., and to Detroit and Toledo, 30c. A year ago the rate to Chicago was 50c.

Chicago. July 1.

(From our Special Correspondent.)

During the past week we note but little change in the general condition of the Chicago coal market. Some little dissatisfaction seems to exist between a few of the retailers and wholesale dealers, which, in all probability, will be done away with in the near future. The market is dull, yet considerable movement has taken place in anticipation of the advance which has been made in anthracite of 25 cents per ton. Retail prices remain the same as yet, viz., large egg, $5.75; small egg, range and chestnut, $6.

On cars f. o. b. Chicago, grate, $5; stove, range and chestnut, $5.25.

Bituminous continues in fair demand, figures unchanged but very firm. They are, per ton of 2,000 pounds: Green and Sullivan County (Ind.) shaft, $2.25@$2.40; Jackson Hill, $3.25; Hocking Valley, $3; Ohio Central, $3; Erie, Briar Hill, $4.15@$4.20; Indiana Block, $2.35; Youghiogheny, $3.35; Sunday Creek, $3; Connellsville, $5.20.

Pittsburg. July 2.

(From our Special Correspondent.)

Coal.—The market presents nothing new or important. The June shipments reached 4,085,001 bushels. The lower markets have an abundant stock on hand to last the balance of the year.

Nominal rates in pools:

Per 100 bushels.		Per 100 bushels.	
1st pool	$4.75	3d pool	$3.90
2d pool	4.50	4th pool	3.25

Railroad coal, $5.00@$5.50.

Connellsville Coke.—Leading dealers report the market firm and the demand good for the season, prices being steadily maintained. The excitement in regard to the Dunbar disaster had a demoralizing effect on trade for a short time. The H. C. Frick Company fired a number of ovens that had been idle, including the Trotter plant of 465 ovens. Western shipments are well maintained; labor is abundant. The car supply is ample; shipments to parts west of Pittsburg, 3,600 cars; east of Pittsburg, 1,150; Pittsburg, 1,640; total, 6,390.

Prices f. o. b. cars at mines: Foundry, $2.45; crushed, $2.65; furnace, $2.15. Freights to Pittsburg, 70c. per ton; Mahoning and Shenango Valleys, $1.35; St. Louis, $3.30; Cleveland, $1.70; Chicago, $2.75.

METAL MARKET.

NEW YORK, Thursday Evening, July 3d.

Prices of silver per ounce troy.

June	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	July	Sterling Exch ge.	Lond 'n Pence.	N. Y. Cts.
28	4.87	47¾	1.04	2	4.87	47 11-16	1.04
30	4.87	47¾	1.04	3	4.87	47¾	1.04
J'ly 1	4.87	47 9-16	1.03	*4			

* Fourth of July.

The market is a waiting one. No decision has yet been reached by the conferees in Congress on the silver bill, but an agreement is expected early next week with the prospects favorable to a large absorption of silver by the government as stated by us last week.

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
June 28	104½	104⅜	15,000
June 30	104⅜	104¼	90,000
July 1	104¼	104	130,000
July 2	104¼	104	55,000
July 3	105½	104	380,000
CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.			
June 28	104½	104⅜	20,000
June 30	104⅜	....	10.000
July 1	104	....	10,000
July 3	104¼	....	20,000
Total sales			730,000

Coinage at the Mints of the United States.

The following report shows the coinage executed at the mints of the United States during June:

Denomination.	Pieces.	Value.
Double eagles	83,575	$1,671,500.00
Eagles	20	200.00
Half eagles	40	200.00
Quarter eagles	15	37.50
Total gold	83,650	$1,671,937.50
Standard dollars	2,900,000	2,900,000.00
Half dollars	200	100.00
Quarter dollars	200	50.00
Dimes	306,197	30,619.70
Total silver	3,206,597	$2,930,769.70
Five cents	1,903,532	95,176.60
One cent	3,332,714	33,327.14
Total minor	5,236,246	128,503.74
Total coinage	8,526,493	$4,731,210.94

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .80	$ 81
Mexican dollars	.80—81	.81½
Peruvian soles and Chilian pesos	.74	.75½
English silver	4.86	4.90
Five francs	.94	.95
Victoria sovereigns	4.90	4.93
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	104½	105½

Copper.—The market remains very firm all round and all indications favor a continuance of this condition of affairs for a long time to come. The consumptive demand is excellent and instead of there being any signs of over-production, stocks are steadily and rapidly diminishing. One transaction in Lake copper at 16½c. per pound on dock New York is reported during the week, but the price generally asked by producers is 17c., under which figure nothing can be bought with the exception of perhaps a few odd lots in the hands of second holders, who might sell at 16⅝c. For casting kinds demand has also greatly increased lately and some very large transactions in these brands have recently taken place at full prices, although the exact details have not been made public. The quotations may now be given as follows: Lake, 16⅝@17c.; Arizona, 15½c.; casting copper, 14¾@14⅞c.

In Europe the smelters seem for the moment to be pretty well supplied, and this fact together with a pause in speculative operations brought about a moderate relapse in the London market for Chili bars and G. M. B. copper, which gave way yesterday (Wednesday) to £57 to £57 2s. 6d. spot, and £57 12s. 6d. to £57 15s. three months, but this decline was afterward rapidly recovered, and to-day's (Thursday's) closing quotations received by cable are: spot, £58 5s. to £58 7s. 6d, and futures £58 15s. to £58 17s. 6. For the second half of June the statistics of visible supplies exhibit a further decrease of 3,000 tons, which with the decrease of 6,000 tons reported in respect of the first half of the month brings the total decrease in June up to the extraordinary figure of 9,000 tons.

The exports of copper during the past week were as follows:

To Liverpool—	Copper matte.	Lbs.	
S. S. City of Berlin	224 bbls.	222,996	$10,000
To Liverpool—	Copper.		
S. S. Teutonic	883 bars.	224,000	26,900
To Hamburg—	Copper matte (in transit).		
S. S. Moravia	654 bags.	149,343	3,250

Tin.—We have again to report a very erratic and irregular market in keeping with sudden fluctuations in London. On our metal exchange only small dealings have taken place, and these up to-day at gradually weakening values, but with latest London quotations about £1 per ton higher. We close firm at 21 spot, 21 July and 21 August.

The consumptive demand continues very good, and of the recent heavy arrivals the great bulk went directly forward to manufacturers and comparatively little into warehouse. Any action on the silver question will certainly lead to much higher prices for tin within the next week or two.

The London market opened weak on Monday, and by Wednesday quotations there had declined to £92 17s. 6d.@£93 spot, and £93 10s.@£93 15s. futures, but the rise to-day (Thursday) brings the latest closing quotations up to £93 15s.@£93 17s. 6d. spot, and £94 10s.@£94 15s. three months.

Lead.—The market is rather quiet. The persistent efforts to bring down prices did not prove successful, and nothing can be bought below 4·55 spot. Consumers have been holding back rather, but it is anticipated that they will have to come into the market again very soon. The probable early advance in freight rates from the West must also have the effect of enhancing the values of the metal delivered in New York.

The Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "The market has been only fairly steady and holders have offered lead more freely. Sales during the week have been light, probably not in excess of 300 tons. At the close 4·45c. is asked for desilverized lead and 4·40c. for soft Missouri; 4·35c. is bid.

The St. Louis Lead Market.—Messrs. John Wahl & Co. telegraph us as follows: "During the early part of the week some brands of lead were lower, soft Missouri being offered at 4·27½c. However, chemical and corroding lead were very strong, being saleable at 4·35@4·37½c. The market closes firm for all brands, both for present and future delivery."

Spelter continues very firm, with hardly anything offering. We quote 5.55 to 5.65. The London market is also firm at £23 5s. for ordinaries and £23 10s. for specials.

Antimony.—Supplies continue exceedingly scarce, although some lots have recently arrived. We quote Cookson's at 25½, L X at 22¼, Hallett's at 20¾.

Nickel continues very firm with quotations 77½ to 82½.

Quicksilver.—This metal continues very scarce. New York Quotations this week are $55@$56, and London remains £10 10s.

IRON MARKET REVIEW.

NEW YORK, Thursday Evening, July 3.

While the condition of the iron market does not materially differ from that reported of late in these columns, yet there is a better feeling prevailing among dealers, who express themselves as satisfied with the existing order of things. No particular reason is given, nor, indeed, does one exist for any great satisfaction. Buyers show but little disposition to grumble, and are coming in more freely. The consumption of iron for manufacturing purposes is daily on the increase, and sales, small in themselves, but in the aggregate amounting to a respectable volume are reported.

Prices are no higher and no cause is apparent why they should be. Iron men seem pretty well agreed that pig iron will not reach any great height in prices this year, even though the volume of business increases. We see, however, an element of great uncertainty in the financial policy of the country. The effort being made to inflate our currency and the enormously extravagant expenditures of the government may start a movement of general inflation of values, in which everyone will mark up everything—of course, to the great injury of the poor, who have all to buy and nothing to sell—and in that event iron might take a jump. There is nothing in the general condition of supply and demand at present that would justify any material advance in prices, beyond the improvement in the market that generally makes itself felt in September, October and November.

American Pig Iron.—The week has been rather quiet. The only feature of interest is the news of the miners' strike in the Birmingham (Ala.,) district. It is the general impression that Southern furnaces would not strenously object to a two or three weeks period of idleness. Southern iron is still rather scarce here, and it is reported that $13 at the furnace is the lowest that would be accepted. Quotations here are for Southern iron, No. 1., $17.50 @ $18. and No. 2, $16.50 @ $17.00. Northern brands sell for $18@ $18.50 for No. 1., and $17.00 @ $17.50 for No. 2.

Lowmoor, Virginia, iron is quoted at $19 and $20 for Nos. 2 and 1 respectively, with a good demand for it. It is reported that the Lowmoor Iron Company has paid off its bonded indebtedness and is declaring good sized dividends.

Scotch Pig Iron.—The cost of importation has increased. Steamers, instead of bringing over pig iron freight-free, as ballast, now ask 2s. 6d. for freight. Quotations are: No. 1 Coltness, $23.50; Dalmellington, $20.50, and Eglinton, $19.75.

It is rumored that a "syndicate" has been formed, or is forming in this city to operate in Scotch pig iron warrants in London and Glasgow. The stock in Cannal's yards on the 1st of January, was 1,035,000 tons, against 730,000 at the present writing, and decreasing daily.

The preceding is what we have been able to obtain from people who know whereof they speak. It cannot be given as authoritative, but there is every indication that it is the truth, though we confess we can neither see nor imagine any good reason for our capitalists gambling in Scotch warrants. Let them try our own wildcats on the Petroleum and Mining Exchange.

Spiegeleisen and Ferromanganese.—Not much is doing in either of these, sales being conspicuous by their absence. Little more than to quote prices can be done, as there is no market to speak of. Twenty per cent. spiegel is $30.50@$31. For 80 per cent. ferromanganese, $72.50@$75, according to time of delivery, is quoted.

Steel Rails.—Rails are rather quiet just now, but it is reported that almost without exception the mills have booked contracts for fall delivery. Indeed, some mills are contracted for up to the first of next year. Quotations in this market are $31@$31.50

Rail Fastenings.—Some few sales are reported, but business has not materially improved in fastenings, nor do prices show any inclination to advance. We quote: Spikes, 2c.; angle plates 1·85@1·90c.; bolts and square nuts, 2·70c., and hex. nuts, 2·95c.; complete joint, steel and iron, according to weight.

Structural Iron and Steel.—There is a good, steady demand for structural iron and steel. The week under review offers nothing new to report. Quotations remain unchanged, and we accordingly repeat them. Universal plates, 2·20; bridge plates, 2·15@2·20; angles, 2·10@2·15; tees, 2·65; beams, 3·10.

Tubes and Pipes.—The meeting of the Association took place last Friday, and it was resolved to leave the schedule of prices unchanged. Business is good, and manufacturers are as busy as they care to be. Ruling discounts on car lots are: 47½ per cent. on butt, black; 40 on galvanized; 60 on lap, black, and 47½ on lap, galvanized; 40 on 1¾-inch boilers; 50 for 2 to 4-inch, and 52½ on larger than 4-inch casing, all sizes, 50 per cent.

Merchant Steel.—An improvement is noted in this market in sympathy with the firmer feeling in iron. We quote this week: Best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.; toe calks, 2¾c.; flat file, 4¾c.; mill file, 5¼c.; taper file, 7¼c.; first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—There are very few old rails here, and the demand is good. Nominal quotations are: $25@$25.50 for tees, and $26@$26.50 for doubles. Six thousand or 7,000 tons have been sold within 10 days, and the demand continues good. This demand is not confined to any one locality, but is from all over the country. The foreign market has advanced 4s., due in some measure to the inquiry from America. Muck bars are being quoted at $29@$30, a fact that encourages holders of old rails very much.

Chicago. July 1.

(From our Special Correspondent.)

The favorable condition of the Chicago iron market reported last week continues. Prices are held very firm, and business in this direction may be said to be a very satisfactory one. Furnaces continue busy, and mills are not seeking orders. The volume of tonnage this week has exceeded that of the last, and the prospect is that buying, particularly in pig-iron, will continue heavy throughout July. The demand is active for both coke and Lake Superior charcoal irons, and no speculative element is noted. All the mills are holding firm, and insist upon maintaining prices. Upon the whole the outlook may be said to be very encouraging for the latter half of the year.

Pig Iron.—There appears to be much activity among the handlers of the crude material notably so in Lake Superior charcoal and coke irons; for the latter a large demand exists, for which prices are firm. Ohio softeners and Southern irons are in steady demand and selling fairly well, with a prospect of an early advance in prices.

We quote to-day for cash per ton of 2,240 lbs. f. o. b. Chicago for Nos. 1 and 2. Lake Superior charcoal No. 3, for car wheels, Nos. 4 and 5, for malleable, $20.50@$21; Lake Superior coke Bessemer, $18; Lake Superior coke Bay View, $17; No. 2, $16.50; No. 3, $16. Southern coke No. 1, $16.50@$17; No. 2, $15.50@$16; No. 3, $15@$15.50.

Southern charcoal, $19@$19.50; standard Southern car wheel, $24@$25; Ohio softeners, Hanging Rock, $18.50@$19; Jackson County, $18@$19; Hanging Rock cold blast, $26@$28; warm blast, $23@$25; No. 1 Scotch, according to brands, $25@$26; American Scotch, $19@$20; Bay View Scotch No. 1, $17; No. 2, $16; Chicago Scotch No. 1, $17; No. 2, $16; Emma Scotch, $19@$19.50; Black band, Hubbard Scotch, $19.50; Haselton, $20.25; soft Silvery, $18; Wellston No. 1, $19; No. 2, $18.50@$19; Hamilton No. 1, $18; Norton No. 1, $18@$18.50; Zanesville No. 1, $18.

Bar Iron.—A fair demand continues, and prices are firm, and $1.65 f.o.b. Valley Mills remains the bottom figure for half extras, but some July busi-

ness has been taken at a lesser rate. Others are quoting higher rates, believing that the near future demands will warrant them in doing so. Quotations vary from $1.75@$1.80 f.o.b. Chicago. Jobbing rates are $1.95@$2 and $2.05@$2.10, for all muck bar with extras.

Black Sheet Iron.—Prices are firm, with a slight advance. Agents are not at all anxious to accept future business. $3.15 is now the figure for No. 27 at mill; jobber's price is $3.35 to the best of this trade.

Galvanized Sheet Iron.—Business continues good, and discounts are steady; discounts for both cheap, and standard brands are 62½ per cent., and 55 and 5 per cent. on charcoal from store. Jobbing lots are quoted according to quantities.

Merchant Steel.—There seems to be less activity in this market during the past week. Some implement manufacturers are in the market, but agents are very firm and delay quoting prices, while buyers are willing to pay former figures. The prices are: For tool steel, $7.75@$8; specials, $12@$25; open hearth machinery, $2.75; Bessemer machinery, $2.50@$2.60; open hearth spring, $2.60@$2.65; tire, $2.50@$2.60; toe calk, $2.70@$2.80; crucible sheet, $7@$10; crucible spring, $3.75.

Car lots are: tire steel, $2.20; toe calk, $2.40@$2.50; Bessemer bars, $2.25@$2.30; machinery $2.60@$2.80 f.o.b. Chicago, 60 days.

Plates, Tubes, etc.—There is a large volume of small business doing and prices are very firm, caused in part by the expected stoppage of mills during the present month. We quote as follows: Tank iron, $2.70; tank steel, $2.90; heavy sheets from 10 to 14, $2.90@$3; steel sheets 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4.25; flange steel, $3.50; shell steel, $3.25; boiler rivets, $4@$4.25; fire box iron and steel, $4.75@$5.50; boiler tubes 4½ inches, and larger 52½ per cent., 2 to 4 inches 50 per cent., and 1¼ inches and smaller 45 per cent.

Structural Iron.—A heavy demand exists as to all classes of this material, and builders in many cases have difficulty in getting their orders filled on time. Some little uneasiness has existed on account of rumors, which come from an apparently reliable source, that structural irons were about to be imported quite extensively, and landed here, after paying freights, duties, etc., at 25 per cent. less cost than that of our own manufacture. These rumors have, of course, turned out without any foundation; in fact, the absurdity is apparent. The present prices are: Angles, iron and steel, $2.30@$240; Universal plates, $2.50; sheared plates, $2.50; ties, $2.60@$2.70; beams and channels, $3.20.

Nails.—The consumption is large, with an increasing demand; iron nails are selling at $1.75; steel cut are steady at $1.90, and wire nails are $2.35.

Scrap Iron.—Business is moderately good, and prices are steady, but unchanged. We continue to quote: Country mixed scrap, $13.50@$14, according to condition; No. 1 mill, $14@$14.50; light wrought, $9.50, horse shoes, $17.50@$18; axles, $23; cast machinery, $12.50@$13; stove plates, $9.50@$10; borings, $8@$8.25; wrought turnings, $11.50@$12; No. 1 railroad shop or forge, $18.50@$19.50; track scrap, $19.

Sheet and bolt copper, 22c., pound rates.

Sheet brass, copper and brass wire, 22 per cent. discount, factory delivery.

Louisville. July 1.

(Special report by HALL BROS. & CO.)

Since our last report the market has not been so active though inquiries are not lacking for lots of car loads to 1,000 tons. Many buyers have covered their wants for several months and prefer to wait 30 to 60 days to see what the market will do, while others are disposed to place orders through the year.

Furnaces are well booked for some months ahead and are of the belief that the market will advance more. There are about 14 furnace stacks south out of blast, which will, of course, reduce the output and will naturally have a tendency to give the market an upward movement. Six hundred tons "grey forge" sold here this week at $14.75 cash, which is no doubt the highest price obtained yet. We learn of 500 tons No. 1 soft selling in St. Louis at $15, while No. 2 soft and No. 3 foundry were sold on the basis of $15.33 cash in this market, though we learn of some sales having been made in this market for "grey forge," $13.25@13.50. We learn that No. 2 foundry was sold at $14.25. We quote 25c. improvement in prices of coke iron.

Hot Blast Foundry Irons.	
Southern Coke No. 1	15.50@ 15.75
" " No. 2	14.75@ 15 25
" " No. 3	14.25@ 14.50
Mahoning Valley, Lake ore mixture	17.75@ 18.75
Southern Charcoal No. 1	17.00@ 17.50
" " No. 2	16.50@ 17.00
Missouri " No. 1	18.00@ 18.50
" " No. 2	17 00@ 17.50
Forge Irons.	
Neutral Coke	13.75@ 14 25
Cold Short	13.75@ 14.00
Mottled	12.75@ 13.25
Car Wheel and Malleable Irons.	
Southern (standard brands)	22.00@ 23.00
" (other brands)	18.00@ 19.00
Lake Superior	22.50@ 23.00

Hall Bros. & Co. have secured the sole agency of the entire product of the Tallapoosa Furnace Co.'s car wheel iron, and it will be first-class.

Philadelphia. July 3.

(From our Special Correspondent.)

Pig Iron.—Two or three buyers tried the experiment to-day of offering $18 for $18.50 No. 1 foundry iron, but brokers are not prepared to have pig iron marked down so early in July. The rather encouraging fact was developed to-day that there is very little really first-class No. 1 iron being offered on the market. This does not mean that No. 1 is really scarce, but simply that it is not being urgently offered for sale. The case is different with No. 2. Three or four companies have some accumulations of stock which they would like to turn into cash, and, as usual, any attempt to work off No. 2 in large lots weakens the market. The mill men are doing nothing at present in the way of buying, and agents who have been trying to induce them to buy meet with very discouraging offers. Gray forge iron is hard to move just at present, and the more sensible brokers and makers are quietly awaiting developments. There is nothing doing this week in Bessemer.

Muck Bars.—No business of any note has been done in muck bars, and only one square offer for a large lot has been received this week.

Blooms.—A few sales of anthracite blooms have just been made, and there seems to be a demand for about all that is being turned out.

Foreign Material.—Only one buyer has shown himself in the market this week, and prices are not calculated just now, to induce buyers to come out.

Merchant Iron.—Manufacturers here would like to get more money for their refined bars, but with Western iron being offered at from one to two-tenths under Eastern quotations, it is simply impossible. Very little Western iron, in the aggregate, has been unloaded in our market, but the offerings of it have deprived Eastern mills of a fair margin for six weeks past. Good refined is to be had anywhere from 1·80 to 1·85. Large car builders have informed some bar-iron manufacturers that they will be in the market in a week or two, for a great deal of iron to cover orders just secured.

Nails.—Nails are moving along in car and small lots, at $1.90 to $2.

Sheet Iron.—Card rates are readily obtainable for everything in sheet iron that can be promptly delivered. Large buyers are asking for the best figures for fall delivery. There will be no shading from card rates.

Skelp Iron.—Skelp has reached about the lowest point possible, and manufacturers are about closing for some 1,200 or 1,500 tons.

Merchant Steel.—Merchant steel makers have booked a very large amount of business during the past 30 days.

Plate Iron.—Two or three of our ship builders are about ready to place orders, and this fact has brought out some propositions from plate and tank manufacturers. Very little new business has been booked. Ordinary tank iron is 2·10; steel, 2·30. The manufacturers prophesy a very busy summer.

Structural Material.—The week has been uneventful. The usual opinions and predictions are repeated, and card rates are without change.

Steel Rails.—Steel rails makers say that quite a number of small railroad companies will be in the market between now and the end of the month, for supplies for short lines, and for repairing purposes. Brokers well posted on steel rails, say that there are large orders on the market which will probably go to Scranton mills. Quotations, $31.50 to $32.

Old Rails.—Old rails are quoted at $25 at tidewater, and there are buyers enough for them, but not at any such figure.

Scrap Iron.—Scrap men report an accumulation of stock of all kinds. No. 1 is quoted at $22.

Pittsburg. July 2.

(From our Special Correspondent.)

Raw Iron and Steel.—The week's sales show a slight falling off, but not more than was to be expected, taking the season and other matters into consideration. The Fourth of July, more than any other holiday, causes generally a suspension of business, at least to a certain extent. We take pleasure in being able to state that the difficulty expected in regard to signing the iron scale for the coming year has been satisfactorily adjusted by small concessions made by both parties, so that the outlook in regard to the fall and winter iron trade, so far, is in a very healthy condition; and as soon as stock taking is over and the necessary repairs made to the mills, business may be expected to open up in earnest. The sales of raw iron for June were unusually large, exceeding June, 1889, by 59,040 tons, and June, 1888, by 85,530 tons. Here are the figures:

SALES OF RAW IRON.

Year.	1888. Tons.	1889. Tons.	1890. Tons.
June 8	21,670	12,850	35,850
June 15	13,900	31,075	48,075
June 22	22,155	32,500	32,835
June 28	16,650	24,440	43,145
Total	74,375	100,865	159,905

In regard to values we have nothing particular to note; prices may be said to have been fairly maintained, with no particular advantage on either side. Last week's sales of steel slabs and billets were among the largest ever reported, including three 5,000-ton lots. Notwithstanding this fact there are other parties in the market looking for some large blocks, provided the terms and conditions can be satisfactorily arranged. Taking other years as a standard, we may expect a decline in transactions for the next two weeks, possibly extending to the end of the month; after that time, unless all signs fail, you may look out for such activity in the iron and steel trade that has not been experienced for a long time. Developments for some time past have been of a favorable character, and the trade is beginning to feel confident in regard to the outcome of events during the last half of the year. The basis of all this is the better demand. As a rule prices for certain descriptions are well maintained, but in pig iron some irregularity prevails, and when sales are a necessity, concessions are almost invariable. Apart from that article, however, in which the depression is probably temporary, everything looks better.

Coal and Coke Smelted Lake Ore.	
3,000 Tons Bessemer, Aug. to Oct	19.80 cash.
2,000 Tons Bessemer, August	19.60 cash
2,000 Tons No. 1 Mill, City furnace	15.75 cash.
1,500 Tons Bessemer, August	19.60 cash.
1,000 Tons Grey Forge, July	15.75 cash.
1,000 Tons No. 1 Mill, City furnace	16.00 cash.
1,000 Tons Bessemer	19.50 cash.
500 Tons No. 1 Mill, City furnace	16.00 cash.
500 Tons Grey Forge	15.50 cash.
500 Tons Grey Forge	15.50 cash.
300 Tons Grey Forge	15.50 cash.
100 Tons No. 2 Foundry	16.50 cash.
100 Tons No. 2 Foundry, all ore	17.50 cash.
50 Tons No. 3 Foundry	16.25 cash.
Coke Native Ore.	
130 Tons No. 1 Silvery	18.75 cash.
100 Tons No. 2 Silvery	16.75 cash.
50 Tons No. 2 Foundry, at furnace	15.75 cash.
50 Tons No. 2 Foundry	16.50 cash.
Muck Bar.	
1,500 Tons Neutral	29.75 cash.
600 Tons Neutral	29.25 cash.
600 Tons Neutral	29.00 cash.
500 Tons Neutral	30.00 cash.
300 Tons Neutral, Spot	29.75 cash.
Steel Slabs and Billets.	
5,000 Tons Billets	31.00 cash.
5,000 Tons Billets, August to October	31.00 cash.
3,500 Tons Billets and Slabs at Mill	31.00 cash.
1,000 Ton Billets at Mill	31.00 cash.
900 Tons Billets, August and September	31.00 cash.
Skelp Iron.	
800 Tons Narrow Grooved	172½ 4 mo.
750 Tons Sheared Iron	212½ 4 mo.
500 Tons Wide Grooved	182½ 4 mo.
Steel Wire Rods.	
800 Tons American Fives	46.50 cash.
Ferro-Manganese.	
100 Tons 80 per cent., Sept., Balt	78.50 cash.
Bloom Ends.	
1,500 Tons Bloom Ends	21.50 cash.
1,000 Tons Bloom Ends	21.75 cash.
750 Tons Bloom Ends, July to Oct	21.50 cash.
Spiegel.	
500 Tons 20 per cent., seaboard	32.00 cash.
Scrap Material.	
200 Tons Best Scrap, gross	16.00 cash.
150 Tons Cast Borings, gross	12.00 cash.
150 Tons No. 1 W. Scrap, net	21.00 cash.
100 Tons Leaf Steel, net	20.00 cash.
100 Tons Coil Springs, gross	22.00 cash.
100 Tons Iron Axles, net	27.50 cash.

Prices.

Coke or Bituminous Pig—	
Foundry No. 1	$17.50@17.75
Foundry No. 2	16.25@16.50
Gray F. No. 3	15.50@16.00
" No. 4	15.00@15.25
White	14.50@14.75
Mottled	14.50@14.75
Silvery	17.50@18.25
Bessemer	19.00@18.50
Low Phos	24.00@24.50
Charcoal Pig—	
Foundry No. 1	23.50@24.50
Foundry No. 2	22.00@22.75
Cold-Blast	25.00@29.00
Warm-Blast	24.00@25.00
10 + 12% Spiegel f. o. b. N. Y., August	29.00
20% Spiegel at New York	$31.75@32.00
Muck-Bar	29.00@29.75
Steel Blooms	31.00@31.50
Steel Slabs	31.00@31.50
Steel Cr'p Ends	21.00@21.50
Steel Bl. Ends	21.50@21.75
Ferro-Man., 80%, f.o.b. Baltimore, Sept.	78.50
Steel Billets	31.00@32.50
Old Iron Rails	27.00@27.50
Old Steel Rails	21.50@22.00
No. 1 W. Scrap	20.00@21.00
No. 2 W. Scrap	18.00@
Steel Rails	32.00@
" light sec	32.00@36.00
Bar Iron, nom	1.85@ 1 90
Iron Nails	1.90
Steel Nails	1.90
Wire Nails	2.25@ 2.30

CHEMICALS AND MINERALS.

NEW YORK, Thursday Evening, July 3.

Heavy Chemicals.—There is no appreciable increase in the volume of business transacted during the current week. The inquiry has been brisker, but the actual trading has been of a hand-to-mouth nature. Prices show signs of a slight improvement, and from outward indications it would seem that the same thing is to be reported of the demand.

Carbonated soda ash is quiet, but buyers are coming in more freely. For 48 per cent., quotations are 1·40@1·45c., and 1·50@1·55c. for 58 per cent., with a limited supply of the latter on hand.

Caustic soda attracts the most attention, and shows an advancing tendency. Quotations are 2·50c.@2·60c., according to quantity and brand.

Caustic soda ash continues dull, with but little doing at 1·40c.@1·45c.

Bleaching Powder.—Quotations in bleach continue as last reported, 1·25c.@1·35c., according to brand. The market is lacking in animation.

Sal soda is quiet at 97½c.@1·05c., buyers being unwilling to come into the market at these prices.

From our Liverpool letter it will be seen that the excitement in caustic soda has somewhat subsided, and that just now interest is centered on the proposed "Chemical Union." On this side very few dealers know anything definite, but the opinion is expressed that the formation of the

Union, while not a foregone conclusion, is neither impossible nor improbable.

Acids.—Very little change is to be noted in this market. Prices are still unsettled and quotations are merely nominal. If there is any improvement it certainly does not lie in this direction. Contradictory reports are given us as to the amount of business transacted, being in excess of past weeks and offering encouraging activity. Some manufacturers claim that the trade is better and others assert that it remains *in statu quo*. On the whole, we do not note any improvement whatsoever, although dealers are not idle.

The news published in this column last week anent the renewal of the agreement between the members of the combination did not excite the interest that apparently was expected. It was an open secret that discontent *did* exist in the Knickerbocker Chemical Company, and, moreover, some of the members made no effort to conceal it. The "outsiders" seem but moderately interested in the matter.

Acid, per 100 pounds in New York and vicinity: Acetic, $1.75@$2.25; muriatic, 18-degree, 80c.@$1.25; muriatic, 20-degree, 90c.@$1.50; muriatic, 22-degree, 90c.@$1.75; nitric, 36-degree, $2.75@$3.50; nitric, 40-degree, $3.25@$4.50; nitric, 42-degree, $3.75@$4.75; sulphuric, 60-degree, 70@80c., and sulphuric, 66-degree, 85c.@1.

Fertilizing Chemicals.—There have been a few scattering sales during the week, but nothing of any importance can be reported. Indeed, it could not be expected at this season of the year. Ammonia is active, aqua ammonia being in very good demand, and due to this the sulphate is slightly higher. Quotations are: High grade dried blood $1.90@$1.95. For the low grade the price is $1.80@$1.85. Azotine, $1.90@$1.95. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $19@$20 per ton, and low grade 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $18@$18.50. Fish scrap, $20.50@$21 per ton. f.o.b. factory. Sulphate of ammonia at $3.10@$3.15 per cwt. Concentrated tankage, $1.80@$1.85. Refuse, bone black, guaranteed 70 per cent. phosphate, $18.50@$19 per ton. Dissolved bone-black is nominally 95c. per unit for available phosphoric acid, although on large lots prices might be somewhat reduced, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $5.75 per ton; kiln-dried, $7@$7.25 per ton, f. o. b. vessels and cars respectively at the mines. Freights by sail from Charleston to New York, $2.25@$2.50 per ton. Charleston rock, ground $11.50@$12, ex vessel at New York.

Quotations are for 48 to 52 per cent. sulphate of potash, $1.12½ per 100 pounds for shipments from date; high grade manure salts, basis 90 per cent. sulphate of potash, $2.37½ per 100 pounds.

Kainit.—Some trading is reported in kainit at $9.50@$9.75.

Muriate of Potash.—The customary arrivals came in during the week. Muriate is quiet at $1.77½@$1.85, according to quantity.

Nitrate of Soda.—Nitrate on the spot is easier, quotations being $1.67½@$1.70, with sales at the first figure reported. The arrivals during the past fortnight have been heavy, hence the eagerness of holders to dispose of their goods.

Brimstone.—Prices have dropped slightly during the week, and future shipments are quoted at $20.75 for best unmixed seconds and $20.25 for thirds. To arrive, nearby, quotations are $21 for seconds and $20.50 for thirds. On the declining market a few sales have occurred during the week.

Liverpool. June 13.

(From Geo. G. Blackwell's Report.)

MINERALS.—During the past week our market has maintained its firmness in prices, whilst a fair amount of business has been done. Manganese: Arrivals have been somewhat small this week, and prices both for spot and forward delivery are firm. Magnesite freely offering, and prices in buyers' favor. Raw lump, 26s.; raw ground, £6 10s.; and calcined ground, £10@£11. Bauxite (Irish Hill brand): The production is scarcely able to keep pace with the demand, and prices are very firm—lump, 20s.; seconds, 16s.; thirds, 12s.; ground, 35s. Dolomite, 7s. 6d. per ton at the mine. French chalk: There have been more arrivals this week, but the best part has gone direct into consumption, and prices are unchanged, especially for G. G. B. "Angel White" brand; 95s. to 100s. medium, 105s. to 110s. superfine. Barytes (carbonate) more inquiry; selected crystal lump is scarce at £6; No. 1 lumps, 90s.; best, 80s.; seconds and good nuts, 70s.; smalls, 50s.; best ground, £6; and selected crystal ground, £8. Sulphate firm and prices are better; best lump, 35s. 6d.; good medium, 30s.; medium, 25s. 6d. to 27s. 6d.; common, 18s. 6d. to 20s.; ground best white, G. G. B. brand, 65s.; common, 45s.; gray, 32s. 6d. to 40s. Pumicestone unaltered; ground at £10, and specially selected lump, finest quality, £13. Iron ore easier. Bilbao and Santander, 9s. to 10s. 6d. f. o. b.; Irish, 11s. to 12s. 6d.; Cumberland, 10s. to 12s. 6d. Purple ore quiet. Spanish manganiferous ore continues in fair demand. Emerystone: Finest lump sought for, and brings full prices No. 1 lump is quoted £5 10s.@£6, and smalls £5@£5 10s. Fullers' earth steady; 45s.@50s. for best blue and yellow; fine impalpable ground, £7. Sheelite, wolfram, tungstate of soda, and tungsten metal continue in fair demand. Chrome metal, 5s. 6d. per lb. Chrome ore: best and lower grades offered freely, and prices are easier. Antimony oxide, 24s.@26s. Asbestos in strong demand, especially rock; prices firmer. Potter's lead ore continues firm; smalls, £14@£15; selected lump, £16@£17. Calamine: Best qualities are scarce—60s.@80s. Strontia steady; sulphate (celestine) steady, 16s. 6d.@17s. Carbonate (native) £15@£16; powdered (manufactured), £11@£12. Limespar: English manufactured, old G.G.B. brand in demand, and brings full prices; 50s. for ground English. Felspar; 40s. to 50s.; fluorspar, 20s. to £6. Bog ore in demand, firm, at 22s. to 25s. Plumbago steady; Spanish, £6; best Ceylon lump at last quotations; Italian and Bohemian, £4 to £12 per ton; founders, £5 to £6; Blackwell's "Mineraline," £10. French sand, in cargoes, continues scarce on spot —20s. to 22s. 6d. Ferro-manganese and silicon spiegel easier. Chrome iron unaltered at last quotations. Ground mica, £50. China clay freely offering—common, 18s. 6d.; good medium, 22s. 6d. to 25s.; best 30s. to 35s. (at Runcorn).

June 25.

(Special Report by Messrs. J. P. Brunner & Co.)

Heavy chemicals all round are quiet this week and caustic soda is meeting with less inquiry. Speculation is rife as to whether the "Chemical Union" is going to be formed or not, and this is the principal topic with both manufacturers and buyers at present. Makers are very sanguine that the "Union" will be formed, and it is thought that something definite will be known on this point within the next few weeks.

Soda ash is dull owing to the usual falling off of American orders at this time of the year. As makers, however, have little to sell for the present, quotations are nominally unchanged.

Soda crystals are dearer at £3 5s., and a fair business passing.

Caustic soda has advanced since our last, but so far this week there is little moving, and we seem to have touched the top for the present. To-day the tone is, if anything, a shade easier, resellers being more anxious for orders. Most manufacturers are declining to quote for forward delivery, in the expectation that the "Chemical Union" will be an accomplished fact within the next few weeks. Nearest spot values are:

Sixty per cent., £7 12s. 6d.@£7 15s.; 70 per cent., £8 12s. 6d.@£8 17s. 6d.; 74 per cent., £9 5s.@£9 10s.; but it is difficult to find any sellers of this strength for July delivery; 76 per cent., £10 nominal.

Bleaching powder continues to droop, and £4 17s. 6d.@£5 are nearest spot values, while the lower quotation is reported to have been shaded. Orders are scarce.

Chlorate of potash is held for 4½d.@4¾d., according to make.

Bicarb soda steady at £5 15s. per ton and upwards for one hundred-weight kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia, with a good inquiry from the States, is firm at £11 7s. 6d.@£11 10s. per ton, for good grey 24 per cent., f. o. b. Liverpool.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, July 3.

Lime.—Nothing of any importance has developed during the week. The disruption of the Knox County (Maine) Lime Association has not as yet had very great effect on this market. Dealers expect greater activity shortly and prices by the ordinary laws of commerce. Shipments in moderate quantities are coming forward, and prices remain as last quoted, viz.: Rockland, common and finishing, 90 cents and $1.20 respectively, per barrel; St. John, common and finishing, 90@95c.; Glens Falls, common and finishing, 85c.@$1.10.

Bricks.—Although there is a very large supply of bricks just now, the demand being equal, or nearly so, there is no apprehension felt, nor any fear of another glut in the market. Quotations this week are: Haverstraws, $6.25@$6.50 per thousand; Uprivers, $5.25@$5.50; Jerseys, $4.50@$5; Pales, $3@$3.50.

IMPORTS AND EXPORTS OF METALS AT NEW YORK JUNE 21 TO JUNE 28 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co		197
Hendricks Bros		50
La Marche's Sons, H		5
Lewisohn Bros		50
Meyer, G. A. & E.		9
Muller, Schall & Co		93
Total		404
Corres. date, 1889		318

Pig Lead.	Lbs.	Lbs.
Caswell, E. A		111
Hendricks Bros		50
Schultz & Co., A		98
G. W. Sheldon		149
Total		408
Corres. date, 1889		129

Tin.	Tons.	Tons.
Abbot, Jere, & Co.		50
Amer. Metal Co		2,125
Bidwell & French		640
Bruce & Cook		10
Carter, Hawley & Co	20	30
Cohen, H		20
Crooks & Co., R		75
Davol & Son		15
Hendricks Bros		26
Lehmaier, E., & Co.		67
Muller, Schall & Co.		520
Naylor & Co		841
Nissen, Geo		10
Phelps, Dodge & Co		2,360
Thomson, A.A. & Co		30
Thomson, D. & Co.	10	50
Townsend, & Co., J.R		30
Trotter & Co, N		75
Total	30	6,964
Corres. date, 1889		4,932

Tin Plates.	Boxes.	Boxes.
Bruce & Cook	6,337	61,045
Byrne & Son		1,000
Central Stamp. Co.	2,312	43,711
Coddington & Co	2,723	57,181
Cohn & Co	600	11,395
Con. Fruit Jar Co		120
Cortiere F. & Co		6,072
Cort & Co	5,690	81,670
Crooks & Co	4,078	26,421
De Milt & Co, H R		868
Dickerson, V. D. & Co	2,269	168,417
Haberman, F		66
Herring, Chas. E		1,000
Iron Clad Mfg. Co		379
Lalance & G. M. Co		8,116
Lazard Bros		1,048
Lehmaier, Schw'z & Co		200
Merchant & Co	705	12,028
Mersick & Co	1,054	5,822
Morewood & Co		35,220
Newell Bros		416
Payne, S. H. & Co		584
Pratt Mfg. Co	4,160	54,873
Phelps, Dodge & Co	2,997	351,486
Shepard & Co		1,823
Taylor, N. & G	200	1,229
Thomson & Co., A.A.	6,612	63,134
Warren, J. M		3,530
Wheeler & Co	705	14,285
Whittemore & Co.	657	12,053
Wolff & Reesing		2,077
Wright, Peter & Co		227
Total	40,180	1,027,496
Corres. date, 1889	19,278	1,227,348

Pig Iron.	Tons.	Tons.
Abbott & Co., Jere		100
Baldwin & Co., A	200	307
Crocker Bros	100	800
Crooks & Co., R		5
Dana & Co		150
Geisenheimer & Co		76
Hagermeyer & Brun	30	30
Irvin, R. L. & Co	100	200
Lillienberg, N	1,909	1,909
Naylor & Co		150
Pierson & Co		30
Sheldon, G. W. & Co		200
Stetsson & Co., G. W.	50	1,625
Williamson, J. & Co.	50	1,100
Total	2,439	6,682
Corres. date, 1889		12,824

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Baldwin Bros. & Co		2
Dana & Co		1,356
Downing, R. F. & Co.		5
Henderson Bros		1
Martin & Co		80
Milne, A., & Co		18
Pope, Jas. E., Jr.		61
Roebling's Sons, J. A.	357	1,598
Wolff, & Co., R. H.		60
Total	357	3,181
Corres. date, 1889	16	47,707

Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.	1	490
Bacon & Co	39	843
Crocker Bros		77
Dickerson, Van Dusen & Co		6
Downing & Co		285
E. J. Jacobus		5
Fuller, Dana & Fitz		11
Holt, H. N		60
Lillenberg, N	62	447
Lundberg, G	388	1,337
Milne & Co		234
Muller, Schall & Co.		209
Naylor & Co		25
Page, Newell & Co.	22	1,410
Plenty, J		10
Wilson, J. G		3
Total	512	5,512
Corres. date, 1889	80	3,343

Scrap Iron.	Tons.	Tons.
Crossman & Co., W. H.		30
Muller, Schall & Co.		18
Samper & Co., S.		186
Stevens, Corvin & Co		30
Ward, J. E. & Co.		392
Total		656
Corres. date, 1889		1,033

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co	182	5,572
American S. Co		565
Bacon & Co		73
Carey & Moen	26	256
Cooper, Hewitt & Co		371
Dana & Co		373
Downing & Co		75
Galpin, S. A		1,066
Greely & Co. C. S.		35
Hazard Mfg. Co	38	217
Jacobus, E. Y		2
Lee, James & Co		1,249
Lillienberg, N		300
Lundberg, G		126
Milne & Co	101	456
Muller, Schall & Co.		607
Naylor & Co		3,704
Page, Newell & Co.		1,078
Roebling's Sons, J. A.	121	1,897
Schulze, P. R		1
Temple & Lockwood		6
Wiebusch & Ho		4
Wood & Niebuhr		25
Wolf & Co., R. H.		2,707
Total	468	20,765
Corres. date, 1889	700	26,669

Old Rails.	Tons.	Tons.
Bowring & Archibald		340
Frankfort. M		3,282
Henderson Bros		300
Hernsheim, L		350
Mosle Bros		123
Naylor & Co	394	1,477
Sawyer, Wallace & Co		610
Total	394	6,482
Corres. date, 1889	771	9,135

Spiegeleisen.	Tons.	Tons.
Abbott, Jere & Co.		2,725
Blakely & McLellan		1,684
Crocker Bros		12,562
Crooks & Co, R		106
Dana & Co	1,050	13,717
Foley, F		50
Geisenheimer & Co.	80	308
Hernsheim, L	177	12,902
Holt, H. N		200
Naylor & Co.		9,578
Perkins, C. L		1,400
Sachs & Richmond		2
Whittemore, H. & Co.	15	40
Total	1,222	55,474
Corres. date, 1889	21,230	59,047

Iron Ore.	Tons.	Tons.
Baiz, Jacob		67
Bowring & Archibald	900	3,092
Earnshaw, A		3,193
Ennis, Andrew		438
Flores & Co., R. de	325	10,548
Johnson & Co., L.	2,330	5,030
Total	3,555	22,368
Corres. date, 1889	225	7,733

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere	120,253	1,960,816
Amer. Met. Co., L.	25,000	881,808
Barber & Co		13,750
Belmont, Aug. & Co		1,454,563
Burgass & Co		173,734
French, Edye & Co		135,374
Heidelbech, Sicheimer & Co		672,608
Seamen, S. H		66,950
Ward, J. E. & Co.		100,000
Wil'ms & T'hune		112,004
Total	145,253	5,571,607
Corre. date, 1889		2,834,097

Copper Matte.		
American Metal Co		2,230,129
Lewisohn Bros		1,500,103
Nichols, Geo. H		267,202
Paulsen, Wm		1,039,428
Wil'ms & T'hune		2,848,706
Total		7,885,568
Corres. date 1889		11,219,052

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Date and amount of last.			Dividends. Total paid.	Date and amount of last.		
1	Adams s. L.	Colo.	$1,500,000	150,000	$10					$555 000	Jan.	1887	15
2	Alice, s. c	Mont	10,000,000	400,000	25	*				850,000	July	1890	.06¼
3	Alma&Nel Wood C., g	Idah.	300,000	30,000	10	*				60,000	Jan.	1889	.50
4	American & Nettie, c.	Colo.		300,000						150,000	Nov.	1889	10
5	Amy & Silversmith, s.	Mon.		341,419						247,530	Aug.	1887	12½
6	Atlantic, c	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	620,000	Feb.	1890	1.50
7	Argenta, s	Nev..	10,000,000	100,000	100	33b,000	July	1889	.10	40,000	Feb.	1890	.20
8	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*				440,000	Jun	1890	.10
9	Aurora, l	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
10	Badger, s	Cal.	250,000	30,000	5					37,500	Mar.	1890	.25
11	Bassick, g. s	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
12	Belle Isle, s	Nev..	10,000,000	100,000	100					300,00.	Dec	1879	.25
13	Belcher, g. s	Nev..	10,400,000	104,000	100	2,028,000	Apl.	1890	.50	15,397,000	Apl.	1876	1.00
14	Bellevue Idaho, s. L.	Idah.	1,250,000	125,000	10	120,000	Dec.	1889	25	200,000	Jan.	1887	10
15	Bodie Con., g. s	Cal .	10,000 000	100 000	100	575,000	Nov	1889	25	1,802,572	Apl.	1885	50
16	Boston & Mont., g	Mon	2,500,000	250,000	10	*				520,000	Jun	1890	.15
17	Boston & Mont., c.s.	Mon	2,500,000	100,000	25	*				1,300,000	May	1890	1.00
18	Breece, s	Colo	5,000,000	200,000	25	*				2,000	Feb.	1880	.01
19	Brooklyn Lead, L. s.	Utah	500,000	50,000	10					127,000	July	1887	.05
20	Bulwer, g	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175 000	Jan.	1884	.10
21	Bunker Hill & Sull	Idah.	3,000,000	300,000	10	*				150.000	Oct.	1883	.06¾
22	Caledonia, g	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	160,000	Jun,	1890	.08
23	Calliope, g	Colo.	1,000,000							90,000	Apl.	1890	.01
24	Calumet & Hecla, c	Mich	2,500,000	100,000	25	1,200,000				34,350,000	May	1890	5.00
25	Carbonate Hill s. L.	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	.05
26	Carlisle, g	N. M	1,000,000	200,000	5					175,000	Dec.	1888	12½
27	Castle Creek, g	Idah.	100,000	100,000	1					51,000	Oct..	1883	.03
28	Cataipa, s. L	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
29	Central, c	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,950,000	Feb.	1890	1.00
30	Chrysolite, s. L	Colo.	13,000,000	200,000	50					1,650,000	Dec.	1884	.25
31	Colorado Central, s. L	Colo.	2,750,000	275,000	10	*				406,250	Aug.	1889	.05
32	Confidence, s. L	Nev..		24,980		306,160	Mar.	1890	.75	199.680	Apl.	1889	1.00
33	Cons. Cal. & Va., g s.	Nev.	21 600 000	216.000	100	108,000	Jan.	1885	.20	3,466,800	Apl.	1890	.25
34	Contention, s	Ariz.	12,500,000	250,000	50	*				¤2,587,500	Dec.	1884	.25
35	**Cop. Queen Cons, C.	Ariz.	1,400 000	140,000	10					210,000	Feb.	1889	.50
36	Crescent, s. L. g	Utah	15,400,000	154,000	100	*				228,000	Oct.	1889	.03
37	Crown Point, g. s	Nev..	10 000,000	100,000	100	2,850,000	Sept	1880	.50	11,484,000	Jan.	1875	2.00
38	Daly, s. L	Utah	3,000,000	150,000	20					1,537 500	Jun.	1890	.25
39	Deer Creek, L. g	Idah.	1 000,000	200,000	5	*				20,000	Jun.	1889	.05
40	Deadwood-Terra, g	Dak.	5,000,000	200,000	25	*				‡1,000,000	Nov.	1887	.10
41	Derbec B. Grav., g. s.	Cal..	10,000,000	100,000	100	90,000	Dec.	1881	.10	210.000	Oct.	1889	.10
42	Dunkin, s. L	Colo.	5,000,000	200 000	25	*				390,000	Oct.	1889	.05
43	Dunstone, g. s. L	Mont	1,000,000	100,000	5	*				6,000	Nov	1889	.03
44	Eclipse	Colo.	100,000	100,000	1					30,000	Nov.	1887	.10
45	Elkhorn, g. s	Mont	1,000,000	100,000	10	50,000	July	1883	.50	850,000	July	1887	.05
46	Empire Lt., g	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
47	Eureka Con., g. s. L	Nev..	5,000,000	50,000	100	550,000	Jun.	1889	.50	4,955,000	July	1888	.25
48	Evening Star, s. L	Colo.	500,000	50,000	10	*				1,450,000	Dec.	1889	.25
49	Excelsior, g	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct..	1880	.25
50	Father de Smet, g	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1883	.20
51	Franklin, c	Mich	1,000,000	40,000	25	220,000	Jun.	1871		930,000	Jan.	1889	2.00
52	Freeland, g. s. c	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
53	Garfield Lt., g. s	Nev.	500,000	100,000	5					95,000	Apl.	1888	12½
54	Gould & Curry, g. s	Nev..	10,800,000	108,000	100	4,465,500	Apl.	1890	.30	° 926,800	Oct.	1870	10.00
55	Grand Prize, s	Nev..	10,000,000	100,000	100	715,000	Nov.	1889	.30	525,000	Jan.	1890	.30
56	Granite, s. L	Idah.	100,000	500,000	1	*				28 400	Oct.	1889	.02
57	Granite Mountain, s	Mont	10,000,000	400,000	25	*				8,400,000	Mar.	1890	.50
58	Green Mountain, G	Cal..	1,250,000	125,000	10	*				212,000	Nov.	1884	.07½
59	Hale & Norcross, g	Nev .	11,200,000	112.000	100	5,086,000	July	1887	.50	1,152,000	July	1888	.50
60	Hecla Con., s. g. L. c	Mont	1,500,000	30,000	50					1,500,000	Apl.	1889	.50
61	Hel'a Mg & Red, g.s.L	Mont	3,315,000	963,000	5	*				197,973	July	1886	.06
62	Holmes, s	Nev..	10,000,000	100,000	100	325,000	Mar.	1890	.25	75,000	Apl.	1886	.25
63	Holyoke, g	Utah	200,000	200,000	1	*				277 000	Feb.	1884	.10
64	Homestake, g	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	5,556,250	Jun.	1890	.10
65	Honorine, s. L	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125.000	Sept	1887	.05
66	Hope, s	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
67	Horn-Silver, s. L	Utah	10,000,000	400,000	25	*				4,150,000	Jun.	1890	.12½
68	Hubert, g	Colo.	1,000,000	1 mil'n	1	*				247.000	D c.	1889	.00½
69	Idaho, g	Cal.	310,000	3,100	100	*				5,235,900	Dec.	1889	5.00
70	Ideal, s. L	Colo.	1,500,000	50,000	10	*				15,000	Oct.	1886	.05
71	Illinois, s	N. M.	100,000	100,000	1	*				45,000	Apl	1889	.20
72	Independence, s	Nev..	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
73	Iron Hill, s	Dak.	2,500,000	250,000	10	134,000	July	1889	.03	156,250	Nov	1887	.07½
74	Iron-Silver, s. L	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
75	Jackson, g. s	Nev..	5,000,000	50,000	100	237,500	Nov	1880	.20	55,000	Jun	1889	.10
76	Jay Gould, g	Mont	2,000,000	200,000	10	*				195,000	May	1889	.04
77	Jocuistita, g	Mex.	2,500,000	250,000	10	*				1,200,000	Feb.	1886	.50
78	Jumbo, g	Colo	2,000,000	200,000	10	*				35.000	Oct.	1887	.02½
79	Kearsarge, c	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.60	100,000	Jan	1890	2.00
80	Kentuck	Nev.	3,000,000	30,000	100	369,000	Dec.	1889	.30	1,350,000	Dec.	1886	.10
81	La Plata, g. L	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
82	Leadville Cons., s. L.	Colo.	1,000,000	100,000	10	*				423,000	Apl.	1889	.05
83	Lexington, g. s	Mont	4,000,000	40,000	100	*				608,000	Jan.	1885	2.00
84	Little Chief, s. L	Colo.	10,000,00	200,000	50	*				810,000	Jan.	1890	.05
85	Little Pittsburg, s. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1889	.50
86	Martin White, s	Nev..	10,000,000	100,000	100	100,000	Feb.	1890	.25	140.000	Dec.	1886	.25
87	Mary Murphy, g. s	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
88	Matchless, s	Colo.	50 000	500,000	1	*				16,000	Feb.	1890	.00½
89	May Mazeppa	Colo.	1,000,000	1,000,000	1	*				10,000	July	1889	.01
90	Minnesota, c	Mich	1,000,00	40,000	25	420,000	Apl.	1886	1 00	1,825,000	Mar.	1876	
91	Mono, g	Cal.	5,000,000	50,000	100	102,850	Nov.	1889	.25	12,500	Mar.	1886	.25
92	Montana, Lt., g. s	Mont	3,300,000	660,000	5	*				2,465,129	Apl.	1890	.06
93	Morning Star, s. L	Colo.	1,000,000	100,000	10	*				850,000	Dec.	1889	.20
94	Moulton, s. g	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
95	Mount Pleasant, s	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
96	Mt. Diablo, s	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	16 3,000	Oct	1889	.20
97	Napa, q	Cal..	700,000	100,000	7	*				36 1,000	Apl.	1890	.10
98	Navajo, g. s	Nev..	1 0,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
99	New Guston, s	Colo.	500,000	100,000	5	*				287,500	Dec.	1889	.87½
100	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06½
101	Northern Belle, s	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	8.30	2,400,000	Apl.	1882	.50
102	North Belle Isle, s	Nev..	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1888	.50
103	North Star, g	Cal..	1,000,000	100,000	10	*				250,000	Dec.	1889	.50
104	Ontario, s. L	Utah	15,000,000	150,000	100	*				11,075,000	Jun	1890	.50
105	Ophir, g. s	Nev..	10,000,000	100,000	100	4,159,440	May	1889	.50	1,985,800	July	1882	1.00
106	Original, s. c	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
107	Osceola, c	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,342,500	Jun.	1890	1.00
108	Oxford, g	N. S.	125,000	125,000	1	*				75,500	Sept	1888	.02
109	Paradise Valley, g. s	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl	1887	.10
110	Parrot, c	Mont	1,800,000	180,000	10	*				588,000	May	1890	.10
111	Peacock, s. g. c	N.M.	2,000,000	200,000	10	*				80.000	Nov.	1886	
112	Plumas Eureka, g	Cal..	1,466,250	140,625	10	*				2,548,046	Oct.	1889	.37½
113	Plutus, g. s. c. L	Colo.	2,000,000	200,000	10	*				20.000	Feb.	1886	.10
114	Plymouth Con., g	Cal..	5,000,000	100,000	50	*				2,280.000	Feb.	1883	.40
115	Quicksilver, pref., q	Cal..	1,250,000	43,000	100	*				1,641,432	May	1880	1.50
116	" com., q	Cal..	5,700,000	57,000	100	*				643,867	July	1882	.40
117	Quincy	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,370,000	Jan	1890	3.00
118	Republic, c	Mich.	5,000,000	100,000	50	400,000	Dec.	1889	.30	4,312,587	Jun,	1887	1.25
119	Richmond, s. L	Nev..	1,350,000	54,000	25	*				99.785	Feb.	1880	.50
120	Ridge, c	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	585,000	Mar.	1886	.05
121	Robinson Con., g	Cal.	10,000,000	200,000	50	*				100,000	Dec.	1882	.50
122	Robert E. Lee, s. L	Colo	10,000,000	500,000	20	*				4,460,000	July	1889	3.00
123	Savage, s	Nev..	11,200,000	112,000	100	6,542,000	July	1889	.50	7,500	Apl.	1883	.01
124	Shoshone, g	Idah.	150,000	150,000	1	*				1,568,146	Apl.	1888	.12½
125	Sierra Buttes, g	Cal..	2,225 000	122,500	10	*				102,000	Jan.	1871	1.00
126	Sierra Nevada, g. s.	Nev..	10,000,000	100,000	100	6,250,000	Oct.	1889	.50	270,000	Apl.	1889	.10
127	Sierra Nevada, s. L.	Idaho	1,000,000	1	1	*				40,000	May	1889	.02
128	Silver Cord, s. g	Colo.	450,000	450,000	1	*				270,000	Apl.	1889	.10
129	Silver King, s	Ariz.	10,000,000	100,000	100	80,000	Jan.	1890	.30	1,950,000	July	1887	.25
130	Silver Mg. of L. V	N. M.	500,000	500,000	1	*				100.000	Apl.	1890	.05
131	Silverton, g. s. L	Colo.	2,000,000	200,000	10	*				50,000	Jan	1884	.25
132	Small Hopes Cons., s	Colo.	5,000,000	250,000	20	*				3,137,500	Jun	1889	.10
133	Spring Valley, g	Cal..	200,000	200,000	1	50,000	Oct.	1886	.25	3,595,000	Jun.	1888	.05
134	Standard, g. s	Cal..	10 000,000	100,000	100	50,000	Feb.	1890	.25	155,000	Nov.	1881	.05
135	Stormont, s	Utah	500,000	500,000	1	*				844.00	Dec.	1887	.20
136	St. Joseph, L	Mo..	1,500,000	150,000	10	*				3,000	Apl.	1888	.02½
137	Swansea, g	Colo.	600,000	60,000	10	*				100,000	Nov	1881	.20
138	Tamarack, c	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,56 1,000	July	1890	3.00
139	Tip Top, s	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	1,250,000	Apl.	1884	.20
140	Tombstone, g. s. L.	Ariz.	12,500,000	500,000	25	*				97,500	Feb.	1886	2.50‡
141	United Verde, c	Ariz.	3,000,000	300,000	10	*				37,500	Apl.	1888	.37½
142	Valencia, M	N. H.	150,000	1,500	100	*				272,500	Oct.	1887	.10
143	Viola Lt., s. L	Idah.	750,000	150,000	5†	*				1,275,000	July	1889	.05
144	Ward Cons., s. L	Colo.	2,000,000	200,000	10					20,000	Dec.	1871	1.50
145	Yankee Girl	Colo.	2,500,000	250,000	10	*				2,184,000	Aug	1889	.10
147	Yellow Jacket, g. s.	Nev..	12,000,000	120,000	100	5,500.000	Mar	1889	.50	3,300	Jun.	1889	.10
148	Webb City, L. Z	Mo..	55,000	11,000	5					25.000	Oct.	1889	.25
149	Woodside	Utah								175,000		1889	.10
141	Young America	Cal..											

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par Value.	Assessments. Total levied.	Date & am't of last.		
1	Agassis Cons., s. L.	Colo.	$2,500,000	50,000	$50	*			
2	Alleghany, s	Colo.	5,000,000	500,000	10				
3	Allouez, c	Mich	2,000,000	80,000	25	$737,000	Jan.	1890	.50
4	Alpha Con., g. s.	Nev..	3,000,000	30,000	100	5 8,750	Jan	1889	87½
5	Alta, s	Nev..	10,080,000	100,800	100	2,248,800	Sept	1888	.50
6	Amador, g	Cal..	400,000	200,000	2	*			
7	American Flag, s	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.10
8	Amity, s	Colo.	250,000	250,000	1				
9	Angio-Montana, Lt.	Mon.	600,000	120,000	5				
10	Astoria, g	Cal..	200,000	100,000	2				
11	Barcelona, g	Nev..	5,000,000	200,000	25	*			
12	Bechtel Con., g	Cal..	10,000,000	100,000	100	173,500	Jan.	1883	.10
13	Belmont, s	Nev..	5,000,000	50,000	100	735,000	Apl.	1886	.10
14	Best & Belcher, g. s.	Nev..	10,080,000	100,800	100	2,180,590	Jan.	1890	.20
15	Big Pittsburg, s. L.	Colo.	20,000,000	200,000	100	*			
16	Bi-Metallic, s	Mon.	5,000,000	200,000	25	*			
17	Black Oak, g	Cal.	3,000,000	300,000	10	*			
18	Boston Con., g	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.20
19	Bremen, s	N. M.	5,000,000	500,000	10	*			
20	Brownlow, s	Colo.	250,000	250,000	1				
21	Brunswick, g	Cal..	2,000 000	400,000	5				
22	Bullion, g. s	Nev..	10,000,000	100,000	100	4,007,000	Aug.	1888	.80
23	Bunkeras, g. s	Cal..	500,000	500,000	1	*			
24	Carisa, g	Wy	600,000	100,000	6	*			
25	Carupano, g. s. L. c.	Ven.	200,000	100,000	2	*			
26	Cashier, g. s	Colo.	500,000	250,000	2	*			
27	Charles Dickens, g. s.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, g	Cal..	1,500,000	150,000	10				
29	Chollar, s	Nev..	11,200,000	112,000	100	1,484,000	July	1889	.50
30	Cleveland, s	Dak.	1,000,000	500,000	2				
31	Colchis	N. M.	500,000	50,000	10				
32	Commonwealth, s	Nev.	10,000,000	100,000	100	170,000	Nov	1888	.50
33	Comstock, g. s	Nev..	10,000,000	100,000	100	30 000	Mar.	1887	.15
34	Con. Imperial, g. s.	Nev..	5,000,000	50,000	100	1,802,500	Nov.	1889	.05
35	Con. Pacific, g	Cal..	6,000 000	60,000	100	192,000	Oct.	1889	.10
36	Cons. Silver, s	Mo..	2,500,000	250,000	10				
37	Crescent, s. L	Colo.	3,000,000	300,000	10				
38	Crocker, s	Ariz.	10,000,000	100,000	100	135,000	Jan.	1890	.10
39	Crowell, g	N. C	500,000	500,000	1				
40	Dahlonega, g	Ga..	250,000	250,000	1	*			
41	Dandy, s	Colo.	5,000,000	500,000	10				
42	Decatur, s	Colo.	1,500,000	300,000	5	*			
43	Denver City, s. L	Colo.	5,000,000	500,000	10	*			
44	Denver Gold, g	Colo.	300,000	60,000	5				
45	Durango, g	Colo.	500,000	500,000	1	*			
46	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1886	1.00
47	El Cristo, g. s	U.S.C	1,000,000	500,000	2	*			
48	El Dorado, g	Cal.	1,000,000	250,000	4	*			
49	El Talento, g	U.S.C	1,000,000	500,000	2				
50	Empire, s	Utah	10,000,000	100,000	100	*			
51	Eureka Tunnel, s. L.	Nev.	10,000,000	100,000	100	*			
52	Exchequer	Nev.	10,000,000	100,000	100	515,000	Apl.	1889	.25
53	Found Treasure, g. s.	Nev..	10,000,000	100,000	100	30,530	Apl.	1889	2½
54	Gogebic L. Syn., I	Wis.	5,000,000	200,000	25	*			
55	Gold Cup, s	Colo.	500,000	500,000	1	*			
56	Gold Era	Mon.	2,000,000	200,000	10	*			
57	Gold Placer, g	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
58	Gold Rock, g	Cal.	1,000,000	500,000	2	*			
59	Goodshaw, g	Cal..	10,000,000	100,000	100	*			
60	Grand Belt, c	Tex.	12,000,000	120,000	100				
61	Grand Duke	Colo.	800,000	80,000	10	*			
62	Great Bemance, g	U.S.C	1,000,000	500,000	2	*			
63	Gregory-Bobtail, g	Colo.	550,000	550,000	1	*			
64	Gregory Con., g	Mon.	3,000,000	300,000	10				
65	Harlem M. & M. Co, g.	Cal..	1 000,000	200,000	5				
66	Head Cent. & Tr. s. g	Ariz.	10,000,000	100,000	100				
67	Hector, g	Cal..	1,500,000	300,000	5	45,000	Jan.	1889	.15
68	Highland, c	Mich	500,000	25,000	20	*			
69	Hollywood	Nev..	200,000	200,000	1				
70	Hortense, s	Colo.	2,000,000	200,000	10				
71	Huron, c	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
72	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	*			
73	Ironton, I	Wis.	1,000,000	40,000	25				
74	Iroquois, c	Mich	1,250,000	50,000	25				
75	J. C. Reynert	Ariz.	10,000,000	400,000	100				
76	Julia Cons., g. s	Nev..	11,000,000	110,000	100	1,660,000	Jan.	1889	.15
77	Lacrosse, g	Colo.	1,000,000	100,000	10	*			
78	Lee Basin, s. L	Colo.	5,000,000	500,000	10	*			
79	Mayflower Gravel	Cal..	1,000,000	100,000	10	585,000	Mar.	1890	.50
80	Medora, g	Dak.	250,000	250,000	1	*			
81	Mexican, g. s	Nev..	10,000,000	100,000	100	2,800,760	Dec.	1889	.25
82	Mike & Starr, s	Colo.	1,000,000	200,000	5	*			
83	Mollie Gibson	Colo.	2,000,000	100,000	2	*			
84	Monitor, g	Colo.	100,000	1 000,000	1	*			
85	Mutual Mg. & Sm.	W'sh	100,000	100,000	1	*			
86	Native, c	Mich	1,000,000	40,000	25				
87	Neath, g	Colo.	1,000,000	100,000	10				
88	Nevada Queen, g	Nev.	10,000,000	100,000	100	250,000	Oct.	1889	.25
89	New Germany, g	N. S.	100,000	100,000	1	*			
90	New Pittsburg, s. L	Colo.	2,000,000	200,000	10	*			
91	N. Commonw'h, s	Nev.	10,000,000	100,000	100	60,000	Apl	1889	
92	North Standard, g	Cal..	10,000,000	100,000	100	20,000	Nov		
93	Noonday	Cal..	600,000	80,000	10	208,000	Dec	1881	1.0
94	Occidental, g	Cal..	500,000	125,000	100	*			
95	Oriental & Miller, s.	Nev..	10,000,000	400,000	25	*			
96	Osceola, g	Nev..	5,000,000	500,000	10	*			
97	Overman, g. s	Nev.	11,520,000	115,200	100	3,823,400	Dec.	1889	
98	Park, s	Utah	2,000,000	200,000	10	*			
99	Peer, s	Ariz.	10,000,000	100,000	100	155,000	Sept	1889	.10
100	Peerless, s	Ariz.	10,000,000	100,000	100	370,000	Mar	1889	.35
101	Phenix	Ariz.	500,000	500,000	1	*			
102	Phœnix, g. s	Ark.	5,000,000	200,000	25	*			
103	Phœnix Lead, s. L	Colo.	100,000	100,000	1	*			
104	Pilgrim, g	Cal..	600,000	300,000	2				
105	Potosi, s	Nev..	11,200,000	112,000	100	1,461,600	Sept	1889	.50
106	Proustite, s	Idah.	250,000	250,000	1	*			
107	Puritan s. g	Colo.	1,500,000	150,000	10	*			
108	Quincy	Colo.	3,000,000	300,000	10	*			
109	Rappahannock, g. s.	Va ..	250,000	250,000	1	*			
110	Red Elephant, s	Colo.	500,000	500,000	1	*			
111	Ropes, g. s	Mich	2,000,000	80,000	25	147,200	July	1887	.50
112	Russell, g	N. C.	1,500,000	300,000	5	*			
113	Sampson, g. s. L	Utah	10,000,000	100,000	100	288,157	July	1888	1.00
114	San Sebastian, g	San.S	600,000	320,000	5	*			
115	Santa Fe, c	N. M.	5,000,000	500,000	10	*			
116	Santiago, g	U.S.C	400,000	200,000	2	*			
117	Security, s	Colo.	10,000,000	1,000,000	10	*			
118	Sheridan	N. M.	2,000,000	200,000	10	*			
119	Silver Queen, c	Ariz.	5,000,000	200,000	25	*			
120	Small Hopes, g	Cal..	10,000,000	100,000	100	100,000	May

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	June 28.		June 30.		July 1.		July 2.		July 3.		July 4 §		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.	....	.....	....	....	...	....	....	....	....	....	....	....	.....
Alice, Mont.	....	.....	....	....	...	....	....	....	....	....	....	....	.....
Argenta, Nev.	....	.....	....	....	.16	....	....	....	....	....	....	....	700
Aspen Mg , Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Belcher	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev.	....	.....	1.30	....	1.50	....	1.55	....	....	....	....	....	1,000
Bodie Cons., Cal.	....	.....	....	....	.80	....	....	....	....	....	....	....	200
Bos. & Mont., Mont.	....	....	....	....	67.50	....	....	....	....	....	....	....	20
Breece, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bulwer, Cal	....	.....	1.75	1.70	1.70	....	2.00	1.80	2.00	....	....	....	2,450
Caledonia	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chryso ite, Colo.	...	.....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Central	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Confidence, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	5 00	.....	....	....	....	....	4 65	....	4.95	....	....	....	300
Crown Point, Nev.	3.00	.....	....	....	....	....	2 60	....	2.75	....	....	....	400
Deadwood, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Con.	...	.....	....	....	....	....	....	....	....	....	....	....	.....
Excelsior, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Father de Smet	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Freeland, Colo.	.45	.42	.44	....	.39	....	.45	.40	.48	.43	....	....	8,600
Gould & Curry, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	..	....	....	....	....	....	....	....	2 95	....	....	....	100
Homestake, Dak.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Horn-Silver, Ut.	3.40	.....	3.30	....	3 20	....	3 30	3.20	3.30	....	....	....	889
Independence, Nev.	..	....	....	....	....	....	....	....	....	....	....	....	.....
Kentuck, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Leadville C., Colo.	.14	.12	.12	....	.12	....	.11	....	.12	....	....	....	6,200
Little Chief, Colo.	.33	.31	....	....	.30	....	.37	.32	.36	....	....	....	11,100
Little Pittsburg, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mono, Cal.	....	.....	....	....	.75	....	....	....	....	....	....	....	500
Mt. Diablo, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev.	....	.....	.50	....	.50	....	....	....	....	....	....	....	1,700
North Belle Isle, Nev.	160	....	....	....	....	....	....	....	....	....	....	....	100
North Star, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Ut.	....	.....	45 25	....	....	....	....	....	45 50	....	....	....	30
Ophir, Nev.	5 13	....	....	....	....	....	....	....	4 50	....	....	....	200
Osceola, Mich.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Plymouth, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver, Pref.	....	....	.43	....	....	....	....	....	....	....	....	....	100
" Com.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quincy, Mich.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Robinson Cons. Colo.	.40	.....	....	....	....	....	....	....	....	....	....	....	200
Savage, Nev.	....	.....	....	....	....	....	....	....	3.80	....	....	....	100
Sierra Nevada, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Silver Cord.	....	.....	....	....	35	....	....	....	....	....	....	....	100
Silver King	....	.....	.20	....	....	....	.20	....	.18	.17	....	....	2,600
Silver Mg. of L. V.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal.	....	.....	.12	....	.12	....	....	....	....	.10	....	....	1,000
Stormont, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket, Nev.	....	.....	....	....	....	....	2 70	....	....	2 90	....	....	200

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	June 28.		June 30.		July 1.		July 2.		July 3.		July 4 §		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Allouez, Mich.	....	.....	....	....	....	....	9 00	....	9.75	....	....	....	200
Alta, Nev.	1.35	....	....	....	....	....	....	....	1.35	....	....	....	400
Andes, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Amador, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
American Flag, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal.	.04	....	.04	....	.04	....	.04	....	.04	....	....	....	4,100
Bechtel	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev.	....	.....	....	....	....	....	....	....	3 70	....	....	....	100
Bonanza King, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal.	.95	....	.95	....	.95	.94	.96	.95	.98	.96	....	....	4,100
Bullion, Nev.	4.00	....	....	....	....	....	3.70	....	....	....	....	....	300
Butte & Bost., Mont.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chollar, Nev	....	.....	....	....	....	....	....	....	3.75	....	....	....	100
Col. & Beaver, Id.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Commonwealth, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Comstock T., Nev.	....	.....	.18	.14	....	....	....	....	....	....	....	....	660
" bonds.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
" scrip.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Con. Imperial, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Denver City, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, Rep. of Col.	....	.....	....	....	....	....	.86	....	....	....	....	....	100
Exchequer	1.00	....	....	....	1.30	....	....	....	....	....	....	....	500
Huron, Mich.	....	.....	....	....	3.13	....	....	....	3 13	....	....	....	400
Julia, Nev.	.50	....	....	....	.50	....	.45	....	.45	....	....	....	300
Kingst'n & Femb'ke	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Kossuth, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo.	....	.....	.05	....	.06	....	....	....	....	....	....	....	500
Lee Basin, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev.	3.70	....	....	....	....	....	....	....	....	....	....	....	100
Minn Iron Co., Mich	....	.....	85.50	....	....	....	....	....	....	....	....	....	100
Moniter	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mutual Sm. & M. Co	....	.....	1.60	....	1.60	....	....	....	1.60	....	....	....	600
Nevada Queen, Nev.	....	.....	....	....	....	....	....	....	.95	....	....	....	200
N. Com'nw'th, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Occidental, Nev.	....	.....	1.25	....	....	....	....	....	....	....	....	....	100
Oriental & Mil., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Overman, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Phœnix of Ariz.	1.30	....	1.30	1 25	1 30	1 25	1.30	....	1.30	....	....	....	7,400
Potosi, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Rappahann'k, Va.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ruby S. M. Co., bds.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Santiago, U. S. C.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
S. Sebastian	....	.....	....	....	.25	....	.30	.25	.30	....	....	....	500
Scorpion	.35	....	....	....	....	....	.35	....	.40	....	....	....	300
Silver Queen	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
" Trust Cert.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sutter Creek, Cal.	1.35	....	1.25	....	1.25	1.20	1.20	1.15	1.15	1.10	....	....	3,400
Tioga, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev.	....	.....	....	....	....	....	2.80	....	....	....	....	....	100
Utah, Nev.	1.20	....	....	....	....	....	....	....	1 10	....	....	....	450
Wall St. M. & M. Co.	....	.....	....	....	....	....	....	....	....	....	....	....	.....

*Ex dividend. †Dealt in at the New York Stock Ex. Unlisted securities. ‡Assessment paid. Dividend shares sold, 38,789 Non-dividend shares sold 25,900. Total, New York, 64 689.
§Fourth of July.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	June 27.		June 28.		June 29.		July 1.		July 2.		July 3		SALES.
Atlantic, Mich.	26.00	.....	25.88	.....	26.75	25 25	26.25	26.00	26 50	25 25	....	....	1,150
Bodie, Cal.	....	....	....	....	1 10	1.05	1 15	1 10	1 00	....	....	....	1,375
Bonanza Developm't	1.05	....	....	....	....	....	....	....	....	....	....	....	5,045
Bost. & Mont., Mont.	66.25	65 50	65 50	65.25	67.25	66.75	67 50	65.75	67 00	66 25	....	....	300
Breece, Colo.	....	.....	....	....	45	....	40	....	....	....	....	....	366
Calumet & Hecla, Mich.	315	308	314	312	314	....	314	313	310	....	....	....	5,775
Catalpa, Colo.	.48	....	.40	.35	.50	.40	.43	.45	.48	.40	....	....	50
Central, Mich.	....	.....	....	....	.75	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	900
Dunkin, Colo.	.60	.....	.60	....	.60	....	.60	....	....	....	....	....	.....
Eureka, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	2,569
Franklin, Mich.	23 00	22.25	23.25	21.50	24.00	22.00	24 00	23.25	23.75	23 00	....	....	.....
Freeland, Col.	....	.....	....	....	....	....	....	....	....	....	....	....	300
Kearsarge	25.75	23.00	28.00	25.50	29.50	27.00	30.38	28.50	34 50	30 50	....	....	30,385
Little Chief, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Moulton	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Utah	47.25	46.75	47.00	46.50	46.75	46.25	47.25	46.75	47. 0	46.00	....	....	1,776
Osceola, Mich.	....	.....	....	....	....	....	....	....	.13	....	....	....	150
Pewabic, Mich.	126	125	120	....	120	119	124	120	125	124	....	....	464
Quincy, Mich.	....	.....	1.75	....	1.65	....	....	....	1.50	....	....	....	225
Ridge, Mich.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nev., Nev.	....	.....	....	....	.18	....	....	....	....	....	....	....	200
Silver King	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Stormont, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich.	219	....	215	....	217	215	217	212	214	210	....	....	153

NAME OF COMPANY.	June 27.		June 28.		June 30.		July 1.		July 2.		July 3.		SALES.
Allouez, Mich.	9 00	8 50	9.50	9 00	9.75	9.00	9.25	8.50	10.25	8 75	....	....	13,582
Arnold, Mich.	2.38	....	2 25	2.00	2.50	2.13	2 50	2.00	2 50	1.75	....	....	2,160
Astec, Mich.	....	.....	....	....	.48	.45	....	....	....	....	....	....	700
Bowman S., Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Butte & Bost., Mont.	24 50	23 75	....	....	24 00	....	25.00	24.75	....	....	....	....	471
Canada	....	.....	....	....	....	....	....	....	11 00	....	....	....	300
Centennial, Mich.	37.50	37.00	38 00	37.00	40 25	38 75	39.00	38.00	39 50	38.00	....	....	1,964
Copper Falls Mg	....	.....	....	....	....	....	....	....	....	....	....	....	300
Crescent, Colo.	.20	.15	....	....	.19	....	.20	.17	....	....	....	....	5,100
Dana, Mich	.40	....	....	....	....	....	....	....	....	....	....	....	100
Don Enrique, N. M.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, S. A.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hanover, Mich.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Humboldt, Mich.	.45	....	....	....	....	....	....	....	....	....	....	....	300
Hungarian, Mich	60	....	....	....	.80	.58	.60	....	....	....	....	....	800
Huron, Mich.	3 38	3.25	3 13	....	3.50	3 00	3.75	2.88	3.63	2.75	....	....	3,295
Mesnard, Mich.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
National, Mich.	....	.....	2.25	....	....	....	....	....	....	....	....	....	50
Native, Mich.	.38	....	....	....	.32	....	.30	....	....	....	....	....	1,300
Oriental & M., Nev.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Phoenix	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Pontiac	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Rockland	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Santa Fe, N. Mex.	....	.....	.80	....	.83	.80	.80	.70	.70	.65	....	....	6,500
Shoshone, Idaho	....	.....	....	....	....	....	....	....	....	....	....	....	.....
South Side, Mich.	.38	.30	....	....	.35	....	.38	....	....	....	....	....	900
Star	.45	....	....	....	.43	....	....	....	....	....	....	....	3 0
Washington, Mich	.63	.60	.60	.55	.58	....	.56	....	.60	....	....	....	1,800
Winthrop, Mich.	....	.....	....	....	....	....	....	....	.55	....	....	....	200

Boston: Dividend shares sold, 50,953. Non-dividend shares sold, 39,822. Total Boston, 90,775.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	June 29.		June 30.		July 1.		July 2.		July 3		*July 4.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron.	.....	102	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
Cameron Coal & Iron Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ches. & O. RR.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic. & Ind. Coal RR.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. & Hocking Coal	100	31⅛	.....	32¾	32	32	.....	32⅛	.....	32⅛	.....	.....	.....	1,175
Col., C. & I	100	.....	.....	51¼	50¾	51⅛	.....	51¼	.....	52	.....	.....	.....	700
Consolidation Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C.	100	.....	.....	169⅝	.....	169⅝	169½	.....	.....	169¼	168½	.....	.....	614
D., L. & W. RR.	50	144⅞	144¾	146⅛	144¾	146⅛	145⅛	146⅛	144½	145⅛	143⅝	.....	.....	34,940
Hocking Valley	100	27¼	27	27½	26¾	29	27	29¼	28¼	29	28⅝	.....	.....	16,385
Hunt. & Broad Top	...	.....	.....	22¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Do. pref.	.....	.....	.....	.....	.....	49	.....	49	.....	.....	.....	.....	.....	450
Illinois Coal & Coke Co.	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh C. & N.	50	.....	.....	.....	.....	52	.....	52	.....	.....	.....	.....	.....	221
Lehigh Valley RR.	50	52⅝	52⅛	52⅛	52⅛	52⅝	52⅛	52¾	52½	.....	.....	.....	.....	1,125
Lehigh & Wilkesb. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mahoning Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marshall Con. Coal.	....	.....	.....	3	.....	1	¾	2	.....	1	½	.....	.....	720
Maryland Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex.	100	152½	.....	152½	.....	.....	.....	.....	.....	153⅛	.....	.....	.....	262
New Central Coal.	50	.....	.....	.....	.....	10⅛	.....	.....	.....	.....	.....	.....	.....	100
N. J. C. R. R.	100	.....	.....	124	123¾	.....	.....	124⅛	.....	.....	.....	.....	.....	400
N. Y. & S. Coal.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y., Susq. & Western	100	.....	.....	.....	.....	.....	.....	.....	.....	7⅛	.....	.....	.....	100
Do. pref.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y. & Perry C. & I.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Norfolk & Western R.R.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	50	.....	.....	62	.....	62⅛	.....	62¼	62	62	.....	.....	.....	500
Penn. Coal.	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. RR.	50	53¼	53⅛	53¼	53⅛	54	53⅜	53⅜	53¾	.....	.....	.....	.....	2,835
*Ph. & R. RR.	.....	46⅝	46	47	46¼	47	46⅝	47¼	46¾	47¼	46⅝	.....	.....	**54,551
Sunday Creek Coal.	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref.	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee C. & I. Co.	.....	49	.....	49	48⅜	.....	.....	50¼	.....	51⅛	50⅛	.....	.....	2,100
Do. pref.	.....	.....	.....	104	.....	.....	.....	.....	.....	.....	.....	.....	.....	50
Westmoreland Coal.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Fourth of July. **Sales in New York, 25,700; in Philadelphia, 28851. Total sales, 117,333.

San Francisco Mining Stock Quotations

COMPANY.	CLOSING QUOTATIONS. June 27.	June 28.	June 30.	July 1.	July 2.	July 3.
Alpha	.....	.....	.....	.....	.....	.....
Alta	1.30	1.30	1.30	1.25	1.20	.....
Belcher	.....	.....	.....	.....	.....	.....
Belle Isle.	1.35	1.55	1.30	1.50	1.50	.....
Best & Bel.	3.65	3.55	3.60	3.20	3.30	.....
Bodie	.55	.70	.80	1.35	1.35	.....
Bulwer	.20	.20	.30	.35	.30	.....
Chollar	3.95	3.85	3.95	3.70	3.65	.....
C'm'weal'h	.....	4.25	3 50	3.00	3.25	.....
Con. C. & V	4.80	4.90	4.90	4.90	4.80	.....
Con. Pac.	.....	.....	.....	.....	.....	.....
Crown Pt.	2.85	2.75	2.65	2.60	2.70	.....
Eureka C.	.....	.....	.....	.....	.....	.....
Gould & C.	2.55	2.50	2.40	2.30	2.25	.....
Grd. Prize.	.....	.....	.....	.....	.....	.....
Hale & N.	3.15	3.10	3.00	2.90	2.85	.....
M. White.	.....	.....	.....	.....	.....	.....
Mexican.	3.45	3.35	3.25	3.25	3.15	.....
Mono.	.40	.45	.65	.75	.85	.....
Mt. Diablo	.....	2.00	2.00	.....	2.00	.....
Navajo	.45	.75	.50	.50	.50	.....
Nev. Queen	.90	.90	.95	.80	.80	.....
N. Belle I.	1.40	1.40	1.40	1.40	.....	.....
Occidental.	.....	.....	.....	.....	.....	.....
Ophir.	4.75	4.70	4.65	4 45	4.35	.....
Potosi.	8.25	8.50	8.75	8.25	8.00	.....
Savage	4.20	3.85	3.80	4.10	3.95	.....
Sierra Nev	3.15	3.40	3.30	3.05	3.15	.....
Union Con	3.25	3.00	2.85	2.90	2.85	.....
Utah	1 15	1.05	1.05	.95	.95	.....
Yellow Jkt.	3.05	3.00	2.90	2.90	2.80	.....

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	....	....
Balt. & N. C	....	10
Big Vein Coal	....	....
Conrad Hill	$ 05	$ 08@$ 10
Cons. Coal	26	28
Diamond Tunnel	25	40
George's Crk. C	1.10	..
Lake Chrome	....	....
Maryland & Charlotte	....	....
North State	....	....
Silver Valley	30@38	45@45

Prices bid and asked, lowest and highest, during the week ending July 2.

Birmingham, Ala.

COMPANY.	Bid. L. H.	Asked. L. H.
Ala. R. Mill Co.	....	$60
*Alice Furnace	$103	....
Anna Howe G. Mg. Co	$⅜	$¾
Bessmer Land.	$34¾@$35	$35@$36
Bir. Mg.& Mg.	....	$83
Cahaba Coal Mg. Co	....	$70
Camille Gold Mg. Co	$½	....
De Bardeleben C. & I. Co	....	$76
Decat. L. Imp.	$13¾	....
DecaturMin.L.	....	$22¾
Ensley Land	$10	....
*Eureka	$130	$300
Florence L. & Mg. Co	$20	$22
Gadsen Land	$6@$6⅛	$6⅛@$6⅛
Hecla Coal Co.	$50	....
Hen, S, & M.Co	$63@$70	$73@$78
Mag-Ellen	$100	....
Mary Lee C. & R. Co	$20	....
Sheffield C. & I. Co	$58@$60	$61@$62½
Sloss I. & S	$44	....
†Sloss I. & S	....	$95½
††Sloss I. & S.	....	$78
Tuscaloose C. I. & L. Co	$24	$27
Tenn.C. & I. Co.	....	$51
" pref.	$100@$104	$105@$106
Woodstock I.Co.	....	$40@$41

Prices, highest and lowest, bid and asked during week ending June 30.

* Bonds. † First mortgage. †† Second mortgage.

Pittsburg, Pa.

COMPANY.	B.	A.	Closing
Allegheny Gas Co	$38.00	....	$38.00
Bridgewater Gas Co.	56.00	$61.00	56.00
Chartiers Val. Gas	..	42.00	42.00
Columbia Oil Co	2.00	2.75	2.00
Consolidated Gas Co.	....	....	....
East End E. Light Co.	60.00	75.00	75.00
East End Gas Co	....	....	....
Forest Oil	....	....	....
Hazlewood Oil Co	50.50	....	50.50
La Noria Mining	.18	.20	.20
Luster Mg. Co	16.00	18.00	17.00
Manuf'turers Gas Co.	15.00	20.00	17.00
Nat. Gas Co. of W. Va	....	....	....
N.Y.& Clev.Gas Coal.	31.50	....	31.50
Ohio Valley Gas	11.00	....	11.00
Mansfield C. & C. Co.	....	....	....
Pennsylvania Gas	14.00	15.50	15.00
People's Natural Gas.	....	....	....
People's N. G. & P. Co	15.75	16.25	16.13
Philadelphia Co	30.25	31.38	30.88
Pine Run Gas Co.	48.00	50.00	50.00
Pittsburg Gas	75.00	....	75.00
Silverton Mg. Co	....	....	....
South Side Gas	..	25.00	25.00
Tuna Oil Co	....	....	....
Union Gas	....	....	....
Washington Oil Co	90.00	....	90.00
W'house Brake Co.	64.00	70.00	65.00
W'house A. B. Co	115.00	118.00	116.75
W'house E. Light	38.63	40.00	39.75
W'moreland & Camb.	....	....	....
Wheeling Gas	19.50	20.00	20.00
Yankee Girl Mg	3.00	5.00	3.00

* Actual selling price.

Prices bid, asked and closing during the week ending July 3.

Sales during the week ending July 3:

Luster Mining	4 shs.	@$17
Peo. N. Gas & P. Co.	210 "	@$16⅛
Philadelphia Co.	372 "	$30⅛@$31
West. A. B. Co	19 "	@$117¼
West. Electric	210 "	$38¾@$39

St. Louis. July 2.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo	$1.02½	$1.05
American & Nettie	1.80	1.82¼
Anderson	....	....
Aztec, N.Mex	....	.25
Bi-Metallic	30 50	....
Black Oak, Cal	....	....
Black Spar	....	....
Bremen	....	....
Buckskin	.08	.12½
Carriboo, Idaho	....	....
Central Silver	.09	.09½
Cleveland, Colo	.03	....
Cleveland, Idaho	.18¾	.21¼
Cour d'Alene	....	.95
Dinero, Colo	....	....
Golden Era, Mont	....	....
Golden King	.04	.05
Gold Run	....	....
Golden West	....	....
Granite Mountain, Mont.	44.00	45.00
Hope, Mont	....	2.40
Ingram	....	.60
Iron Clad	....	....
Ivanhoe, Colo	....	....
I. X. L., Colo	.02	.04
Keystone	.01¼	.02
La Union	.11	.11½
Little Albert	.23¾	.26¼
Little Giant	....	....
Major Budd, Mont	.07½	.08
Mexican Imp., Mex	....	....
Michael Breen	1.32½	1.35
Montrose Placer, Colo.	....	....
Mountain Key	....	....
Mountain Lion	....	....
Neath, Colo	....	....
Old Colony	....	....
Old Jesuit	....	....
Pat Murphy, Colo	.12½	.14
Pedro	....	....
Phillips, Colo	....	....
Pine Grove, Idaho	....	.01
Queen of the West, Idaho	....	....
Raspberry, Mont	....	....
San Francisco, Mont	....	....
Silver Age, Colo	1.55	1.57½
Silver Bell	....	....
Small Hopes, Colo	.93¾	.97½
Tourtelotte, Colo	.01½	.04
West Granite, Mont	1.05	1.10
Wire Patch	.15	.16¼
Yuma, Ariz	.55	.56¼

Trust Stocks. July 4.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.	
Am. Cotton Oil. Tr. Repts	$28 @$28⅜
Cattle Trust	14¼@ 16
Distillers' & Cattle Feeders'.	45½@ 46¼
Linseed Oil	50 @ 51
National Lead	21¼@ 21⅜
Natural Gas	.. ..
Standard Oil	165 @169
Sugar Refineries	72⅞@ 73

Sales at the New York Stock Exchange week ending July 4:

	Sales.	Price H.	Price L.
*American Cotton Oil	4,580	30⅛	27¼
National Lead	31,817	21¾	18¾
Sugar	35,061	74⅛	70½

* Trust receipts.

Foreign Quotations.

London.

COMPANY.	Highest.	Lowest.
Almada, Mex	1s. 3d.	9d.
Amador, Cal	20s.	17s. 6d.
Appalachian, N. C	9d.	6d.
Canadian Phos. Canada.	£1¼	£1¼
Carlisle, N. Mex	3s 6d.	3s.
Colorado, Colo	£5-16	£3-16
Comstock, Utah	....	....
Condova	....	....
Cons. Esmeralda, Nev.	2s. 9d.	2s. 3d.
Denver Gold, Colo	9d.	3d.
Dickens Custer, Idaho.	1s. 6d.	1s.
East Arevalo, Idaho.	2s.	1s.
Eberhardt, Nev	....	....
El Callao, Venezuela	£2⅜	£2⅛
Elmore, Idaho	2s. 3d.	1s. 9d.
Empire, Mont	1s. 3d.	9d.
Garfield, Nev	1s. 9d.	1s. 3d.
Jay Hawk Mont	3s. 6d.	2s. 6d.
Josephine, Cal	1s. 6d.	1s.
Kohinoor, Colo	2s. 3d.	9d.
La Luz, Mex	9d.	3d.
La Valera, Mexico	20s.	15s.
Montana Lt., Mont	£1⅜	£1¼
New California, Colo	8s.	7s. 6d.
New Consolidated	9d.	3d.
New Eberhardt, Nev	£1⅛	....
New Emma, S., Utah	£3-16	£1-16
New Flagstaff, Utah	3s. 9d.	3s. 3d.
Newfoundland, N. F	3s. 6d.	3d.
N. Gold Hill, N. C	1s 9d.	1s. 3d.
New Guston, Colo	£⅜	£⅛
New Hoover Hill, N. C.	£1⅛	....
Old Lout, Colo	£¾	£⅝
Palmarejo, Mex	16s	15s.
Pinos Altos, Mex	£⅜	£⅛
Pittsburg Cons., Nev.	£5-16	£¼
Richmond Con., Nev.	£1⅛	£⅞
Ruby&Dunderberg,Nev	1s.	9d.
Sam Christan, N. C.	1s. 3d.	9d.
Sierra Buttes, Cal.	£¼	£¼
" Plumas Eur.	£⅞	£¾
Sonora Mex	9d.	3d.
Stanly, N. C	....	....
United Mexican, Mex	£⅛	£¼
U. S. Placr, Colo	2s. 3d.	1s. 9d.
Viola Lt., Idaho	2s. 3d.	1s. 9d.

Highest and lowest prices during the week ending June 21.

Paris.

	Francs	Francs.
Belmez, Spain	742.50	742.50
Callao, Venez	61 25	61.25
Callao Bis, Venez	4.00	4.00
East Oregon, Ore	8.25	8 25
Forest Hill Divide, Cal	100.00	100.00
Golden River, Cal	350.00	350.00
" " parts	35.00	35.00
Lexington, Mont	121.25	121.25
" parts	3.00	3.00
Ouray, Colo	....	....
Rio Tinto, Spain	435.00	435 00
Tharsis, Spain	140 00	140.00

Highest and lowest prices during the week ending June 19.

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $1.75@$2.00
Muriatic, 18°, ℔ 100 lbs 1.00@1.50
Muriatic, 20°, ℔ 100 lbs 1.12½@1.75
Muriatic, 22° ℔ 100 lbs 1.37½@2.00
Nitric, 36°,℔ 100 lbs 4.00@4.25
Nitric, 42°, ℔ 100 lbs 6.00@6.25
Oxalic, ℔ 100 lbs .6.50@10.50
Sulphuric, 60°, ℔ 100 lbs. 80@1.25
Sulphuric, 66°, ℔ 100 lbs 1.00@1.75

Alkali—
Refined, 48 p. c @2¾
Refined, 58° 2¾@3
Alum—Lump, ℔ lb 1¾
Ground, ℔ lb. 1¾@2
Lump. ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton £4 10
Aqua Ammonia—18°, ℔ lb 4¾
20°, ℔ lb 6
22°, ℔ lb 6@7
26°, ℔ lb 10@11
Ammonia—Sul., ℔ 100 lbs 3.15
Carb., per lb 7½@8½
Arsenic—White, powdered, ℔ lb.3½@3½
Red. ℔ lb 5½@6¾
White, at Plymouth, ℔ ton £12 2 6d.
Asbestos—Am., p. ton $50@$300
Italian, p. ton, c. i. f. L'pool £18@£60
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb 4½@5½c
Hard Cuban, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00
Barytes—Sulph., Am. prime white 17@20
Sulph.,foreign,floated, p. ton 19½@21.50
Sulph., off color, p. ton 11.50@14.00
Carb., lump, f.o.b. L'pool, ton £6
No. 1, casks, Runcorn " £4 10 0
No 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb 2@2½
Borax—Refined, ℔ lb. 9½@9⅝
Concentrated 7¾@8⅜
Refined at Liverpool, ℔ ton £29
Brimstone—*See Sulphur.*
Bromine—℔ lb 37@38
Chalk—℔ ton 1.75
Precipitated, ℔ lb 4¾@5
China Clay—English, ℔ ton 13,50@18.50
Southern, ℔ ton 13.50
Chrome Yellow—℔ lb 10@25
Cobalt—Oxide, ℔ lb 2·60@2·90
Copper—Sulph. English Wks, ton £20@£21
Copperas—Common, ℔ 100 lbs 70
Best, ℔ 100 lbs 75@1.00
Liverpool, ℔ ton, in casks £1 15s.
Cream of Tartar—Am. 99% 22½
Powdered, 99 p. c 23
Emery—Grain, ℔ lb 4½@5
Flour, ℔ lb 3¾@3½
Feldspar—Ground, ℔ ton 15.00
Fuller's Earth—Lump, ℔ bbl. .90@95
Powdered, ℔ lb 1⅝@2
Gypsum—Calcined, ℔ bbl. 1.25@1.50
Iodine—Resublimed 2.75
Kainit—℔ ton $9.25@$9.75
Kaolin—*See China Clay.*
Lead—Red, ℔ lb 6¾@9
White, American, in oil, ℔ lb 6¾@7¼
White, English, ℔ lb 8½@8¾
Acetate, or sugar of, white 12@13
Lime Acetate—Amer. Brown. 95@1.00
" " Gray 1.75@1.87½
Litharge—Powdered, ℔ lb 6¼@6¾
English flake, ℔ lb 9@9¼
Magnesite—Greek, ℔ ton 20.00
Manganese—Crude, per unit .23@.28
Oxide, ground, per lb 2¼@6½
Mercuric-Chloride — (*Corrosive Sublimate*) ℔ lb. 70@72
Mineral Wool—℔ lb. 2
Mica—In sheets according to size, 1st quality, ℔ lb .25@$6.00
Ochre—Yellow, "B. F.," ℔ ton, f.o.b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston. 5.75@7.00
Ground, ex vessel New York. 11.00
Canadian Apatite, lump, f. o. b. at Montreal, ℔ ton 16.00
Phosphorus—℔ lb. .70@75
Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb 5@7
Potassium—Cyanide, ℔ lb. .39@40
Bromide, ℔ lb. 33
Chlorate, ℔ lb. 13@10
Carb. ℔ lb. 4.70@5.54
Caustic, ℔ lb 7½@8
Iodide 2.65@2.70
Muriate, ℔ 100 lbs 1.77½@1.80
Nitrate, refined, ℔ lb 6@8
Bichromate, ℔ lb 10¼@11
Sulphate, ℔ 100 lbs 2.30@2.35
Yellow Prussiate, ℔ lb 17½@18
Red Prussiate, ℔ lb 42@45
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb 1¾@2
Powdered, pure, ℔ lb 2¼@2½
Pyrites—Non-cupreous, p. units 10d
Quartz—Ground, ℔ ton. 14.00@16.00
Rotten Stone—Powdered, ℔ lb..3¼@3½
Lump, ℔ lb 6@10
Salt—Liverpool, ground ℔ sack. 75@80
Turk's Island, ℔ bush 25@28
Salt Cake—℔ lb. 60@62½
Saltpeter—Crude, ℔ lb. 5¼@5½
Refined. ℔ lb. 6@8
Soda Ash—Carb.,48 % 100 ℔ 2¾
Caustic, 48 % 2¼@2½
Soda Caustic, 60% 3.25@3.35
" 70% 3.00
" 74–6% 2¾
Sal, English, ℔ 100 lbs 1⅛@1⅜
Sal, American, ℔ 100 lbs .90
Nitrate. 100 lbs 1.70
Strontium—Nitrate ℔ lb. 9@9½
Sulphur—Roll, ℔ lb 1¾
Flour, ℔ lb 20
Crude Brimstone, 2s., ℔ ton. 19.00@19.29
Crude Brimstone, 3ds, ℔ ton. 18.50@18.70
Talc—Ground French, ℔ lb 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton £4 5
Vermillion—American, ℔ lb. 61
English, ℔ lb. 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 5½@5⅝
Extra, ℔ lb. 7
Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb 6@6¼
Paris, Red Seal, ℔ lb. 6¼@7

* Spot.

THE RARER METALS.

Aluminum—(Metallic), ℔ lb. $2.@$2.50
Sheet, per lb. 2.50
Arsenic—(Metallic). per lb. .40
Barium—(Metallic), per gram $4.00
Bismuth—(Metallic), per lb. 2.75
Cadmium—(Metallic), per lb. 1.00
Calcium—(Metallic), per gram 10.00
Cerium—(Metallic), per gram. 7.50
Chromium—(Metallic), per gram 1.00
Cobalt—(Metallic), per lb. 6.00
Didymium—(Metallic), per gram 9.00
Erbium—(Metallic), per gram. 7.50
Gallium—(Metallic), per gram 140.00
Glucinum—(Metallic) per gram. 12.00
Indium—(Metallic), per gram. 9.00
Iridium—(Metallic), per oz. 7.00
Lanthanum—(Metallic), per gr. 10.00
Lithium—(Metallic), per gram. 10.00
Magnesium—Per lb 4.50
Manganese—Metallic, per lb. 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per gm. .50
Niobium—(Metallic), per gram. 5.00
Osmium—(Metallic), per oz 65.00
Palladium—(Metallic), per oz. 35.00
Platinum—(Metallic), per oz. 9.00
Potassium—Metallic, per lb. 28.00
Rhodium—(Metallic), per gram. 5.00
Ruthenium—(Metallic), per gm. 5.50
Rubidium—(Metallic), per gram 2.00
Selenium—(Metallic), per oz. 1.80
Sodium—(Metallic) per lb. 2.50
Strontium (Metallic), per gm. .60
Tantalum—(Metallic) per gram 9.00
Telurium—(Metallic) per lb. 5.00
Thallium—(Metallic) per gram. .25
Titanium—(Metallic) per gram. 2.25
Thorium—(Metallic) per gram. 17.00
Tungsten—(Metallic) per oz. 2.25
Uranium—(Metallic), per lb. 5.00
Vanadium—(Metallic), per gm. 22.00
Yttrium—(Metallic), per gram. 9.00
Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 3.50@3.75
Jerseys, ℔ 1,000 5.50@7.00
Up Rivers, ℔ 1000 6 75@7.00
Haverstraw seconds, ℔ 1000 6.50@7.00
Haverstraw firsts ℔ 1,000 7.00@7.75
Fronts, nominal, ℔ 1000.
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore
Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu.ft. 45@1.25
Granite, Scotch ℔ cu ft. 1.00@1.15
Cement—Rosendale, ℔ bbl .85@1.10
Portland, American, ℔ bbl. 2 15@2.45
Portland, foreign, ℔ bbl. 2.30@2.40
Portland, " special brands. 2.45@2.75
Roman, ℔ bbl. 2.65@2.85
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.00@8.25
Slate—Purple and green roofing, ℔ 100 ft 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black, roofing, ℔ 100 sq. ft. 4.25@5.50
Lime—Rockland, common ℔ bbl. 1.00
Rockland, finishing, ℔ bbl. 1.20
St. John, com. and finish, ℔ bbl. .90@.95
Glens Falls, com. and fin., ℔ bbl .85@1.10
Labor—Ordinary, ℔ day 1.50@2.00
Masons, ℔ day 4.00
Plasterers, ℔ day 4.00
Carpenters, ℔ day 3.50
Plumbers, ℔ day 3.50
Painters, ℔ day 2.50@3.50
Stonesetters, ℔ day 3.50@4.00
Tilelayers, ℔ day 3.50@4.50
Bricklayers, ℔ day 4.00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.

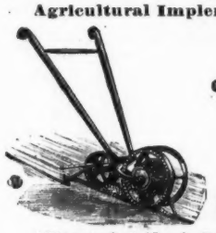
NEW YORK PRICES CURRENT.
JULY 5, 1890.

Discounts are for Export Only.

In the interest of the extension of the markets for American manufactures the ENGINEERING AND MINING JOURNAL has secured the services of gentlemen thoroughly acquainted with the export trade and with foreign markets, and it offers its services to foreign buyers who may desire information concerning any article whatever of American manufacture. No charge will be made for these services, either directly or indirectly through commissions on goods purchased. The proprietors of the ENGINEERING AND MINING JOURNAL are neither commission merchants nor exporters, but they have many sources of information, both at home and in foreign countries, and place these at the service of manufacturers and exporters here and of importers and consumers in other countries.

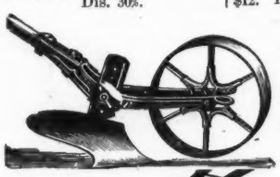
The name and address of the manufacturers of goods quoted in this list can be obtained from us.

Agricultural Implements.



"Planet, Jr." No. 2 Seed Drill, $9. Dis. 30%.

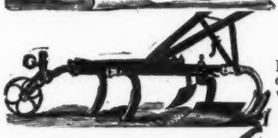
Combined Drill Cultivator Rake, Plow, etc., $12. Dis. 30%.



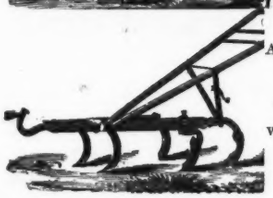
"Fire Fly" single-wheel Hoe, Cultivator and Plow, $5.

"Fire Fly" Hand Plow, $2.50.

30 % discount, f.o.b. New York.



All Steel Horse Hoe and Cultivator combined, with wheel, $6 75-100 net.



All Steel Plain Cultivator.

With wheel, $4.50; without wheel, 60c.

HAY FORKS.

Gold Finish, Patent Overcaps.

Three Tine Forks.

No.	Tine.	Handles.	Per doz.
30	10 in.	4½ ft.	Boy's $7.75
32	12 "	4 to 6 ft.	..... 9.00
32 S	12 "	"	Strapped..... 10.50
32 B	12 "	"	Bent..... 9.50
32 B S	12 "	"	Bent & St'pd 11.00
33	12 "	"	..... 9.50
33 S	13 "	"	Strapped..... 11.00
33 B	13 "	"	Bent..... 10 00
33 B S	13 "	"	Bent & St'pd 11.50
34	14 "	"	..... 10.25
34 B	14 "	"	Bent..... 10.75
35	15 "	"	..... 11.25
35 B	15 "	"	Bent..... 11.75
42 B	12 "	"	Bent..... 12.50
42 B S	12 "	"	Bent & St'pd 14.00

Manure Forks, Solid Steel Shanks, Gold Bronze Finish, Patent Overcaps.

No. 44, oval, 4 tine, 12 in. tine, 4 ft. handle, plain ferrules, $12.50 per doz.

No. 44 S, oval, 4 tine, 12 in. tine, 4 ft. handle, strapped ferrules, $14.

No. 44½, oval, 4 tine, 12 in. tine, 4½ ft. handle, plain ferrules, $12.50.

No. 44½ S, oval, 4 tine, 12 ft. tine, 4½ ft. handle, strapped ferrules, $14.

No. 54, oval, 5 tine, 13 in. tine, 4 ft. handle, plain ferrules, $19.50.

No. 54 S, oval, 5 tine, 13 in. tine, 4 ft. handle, strapped ferrules, $21.

No 64, oval, 6 tine, 13 in. tine, 4. ft. handle, plain ferrules, $22.50.

No. 64 S, oval, 6 tine 13 in. tine, 4 ft. handle. strapped ferrules, $24.

PLOWS.

Reversible Oneonta Clipper.

16. Oneonta Clipper, Reversible, Iron beam Cutter..... $14
" Oneonta Clipper, Reversible, Iron Wheel and Cutter..... 15
18. Oneonta Clipper, Reversible, Iron Beam Cutter..... 15
" Oneonta Clipper, Reversible, Iron Beam, Wheel and Cutter.... 16
17. Hard Metal, Reversible, Iron Beam Cutter..... 17
17. Hard Metal, Reversible, Iron Beam, Wheel and Jointer..... 17
19. Hard Metal, Reversible, Wood Beam Cutter..... 16
" " " " " Wheel and Jointer..... 17
20. Steel Mould Board, Reversible, Wood Beam Cutter 15
" " " " " " Wheel and Cutter..... 16

Iron Beam Plows.

Two-horse Sod and Stony Land.... 8.50 plain.
Curtis's Sod Two horse..... 11.5¢ "
" " " " ..... 13.00 cutter.
" " " " ..... 14.25 wheel & cutter.

Subsoil Plows.

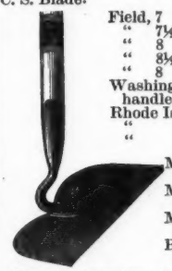
Two-horse 9.50 Draft Rod.
" " 11.00 Wheel and Draft Rod.

Hitchcock's Potato Digger and Shovel Plow.

Improved adjustable handle shovel plow..... 7.00
Hitchcock's Potato Digger..... 8.00
" " " and shovel plow..... 10.50
Dis. 30%.

HOES.

Ely Standard Socket, all Gold Bronze Neck, full Pol'd, C. S. Blade.



Field, 7 × 5 in., selected handles..$9.00
" 7½ × 4½ " " " .. 9.00
" 8 × 4¾ " " " .. 9.00
" 8½ × 4½ " " " .. 9.00
" 8 × 5 " " " .. 9.00
Washington County Pattern, spring handles..... 10.00
Rhode Island, 7 to 9 in., spr'g handles 9.00
" " 9½ in. " " 9.25
" " 10 " " " 9.50

Meadow, 9 × 4 in., poplar handles..... 9.00
Meadow, 9½ × 3½ in., poplar handles..... 9.25
Meadow, 10 × 3½ in., poplar handles..... 9.50
Broom Corn, 7½ × 4½ in., poplar handles..... 9.00

Popular Handles in Meadow Socket Hoes, unless otherwise ordered.

RAKES.

The S. R. N. Improved.

22 Teeth Rake, $32.00
26 " " 34.00
25% dis.

Chieftain Lock Lever
No. 1..... $30.00
No. 2. ..... 30.00
No. 5..... 29.00
Iron wheels, $2 extra. With Pole, Double Tree and Neck Yoke, $2 extra. 22 cubic feet packed, 400 lbs. gro., 225 lbs. net.

Golden Farmer Self-Dumping Rake, $37.00; 22 cu. ft., 430 lbs. gro., 250 lbs. net.

Chieftain Hay Tedders, $59.00; 700 lbs. gro., 450 lbs. net.

Potato Diggers, $7.00; 100 lbs. gro., 60 lbs. net; dis., 40% f.o.b. ship New York or Boston.

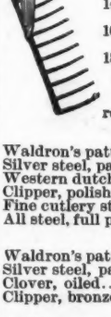
RAKES (GARDEN).

Braced steel garden rakes. Per doz
8 teeth..... $8.00
10 " 9.00
12 " 10.00
14 " 11.00
16 " 12.00

Braced malleable garden rakes.
10 teeth..... $5.50
12 " 6.00
14 " 6.50
16 " 7.00

Ten-Teeth Malleable Garden.	Plain.	Braced.	Steel Garden. Plain.	Braced.
10-Teeth.....	$5.50	$6.00	$9.00	$10.50
12 "	6.00	6.50	10.00	11.50
14 "	6.50	7.00	11.00	12.50
16 "	7.00	7.50	12.00	13.50

Dis. 70 and 5%.



Cast steel garden rakes.
Per doz.
10 teeth, polished, tapering bar, tempered rake.$9.00
12 " " " " " " 10.00
14 " " " " " " 11.00
16 " " " " " " 12.00

Cast steel lawn rakes.
12 teeth, polished, tapering bar, tempered rake..... $10.00
14 teeth polished tapering bar, tempered rake..... 11.00
16 teeth polished tapering bar, tempered rake..... 12.00
18 teeth polished tapering bar, tempered rake..... 13.00
Dis. 70% from Standard Association list.
Prices made where XX handles, etc., are required.

SCYTHES (GRASS).

Waldron's pattern, oiled..... $8.50
Silver steel, painted..... 8.50
Western dutchman, bronzed and painted..... 9.00
Clipper, polished web..... 9.00
Fine cutlery steel, full polished..... 10.00
All steel, full polished..... 11.00

Grain Scythes.

Waldron's pattern, oiled..... 11.25
Silver steel, painted..... 11.25
Clover, oiled..... 11.25
Clipper, bronzed and painted..... 11.50

Lawn Scythes.

Clipper, bronzed and painted..... 9.00
Dis., 40 and 10%.

SOWER, BROADCAST SEED.

Per dozen..... $36 f.o.b.
Gross wt., 110 pounds per dozen
Net wt., 75 pounds per dozen.

Anvils.

"Eagle anvils.

	Weight about			Weight about	
No. 000.....	½ lb.	$1.00	No. 4.....	40 lbs.	$4.25
" 00.....	4 "	1.70	" 5.....	50 "	5.05
" 0.....	10 "	2.20	" 6.....	60 "	5.50
" 1.....	15 "	2.75	" 7.....	70 "	6.00
" 2.....	20 "	3.00	" 8.....	80 "	7.00
" 3.....	30 "	3.75	" 9.....	90 "	8.00

Anvils weighing 100 to 800 lbs., 10 cts. per lb. Discount 20 and 10 %.

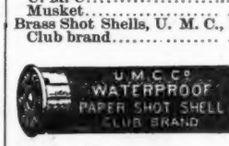
Arms and Ammunition.

Wood Powder.

	Kegs, 25 lbs.	¼ kegs. 6¼ lbs.	1 lb. cans.
Trap for first quality arms only.....	$19.50	5.00	.85
A, for large bore..... C, for general use..... D, fine for small bore and rifles..... E, very fine for small bore rifles and gallery shooting.....	17.00	4.35	.75

	Discount. Per cent.	
Bullet Breech Caps.....per lb.	1.60	10
Conical Bullet Caps..... "	1.75	10
	Discount. Per cent.	
Rim Fire Cartridges.....	60	10
Military Rim Fire Cartridges.....	15	10
Central Fire Pistol and Rifle Cartridges..	40	10
Central Fire Metallic Cartridges for Target and Sporting Rifles.....	30	10
Military Cartridges, Central Fire.....	30	10
Lefaucheux Cartridges.....		6

	Special	
Gatling Cartridges.....		
Primed Shells and Bullets.....	25	10
Friction Cannon Primers.....	20	10
Primers.....		10
Percussion Caps, F. C .....per M.	33c.	
U. M. C..... " .	42½c.	
Musket..... " .	45c.	
Brass Shot Shells, U. M. C., 1st qual.....	60	10
Club brand.....	65	10



Paper Shot Shells.

14, 16 and 20 ga. First quality, 30, 10 and 10 per cent; 4, 8, 10 and 12 ga., First quality, 25, 10 and 10 per cent.

14, 16 and 20 ga. Club brand, 30, 10 and 10 per cent.
10 and 12 ga. Club brand, 33⅓, 10 and 10 per cent.
Gun Wads, 20 and 5 per cent.

RIFLES.

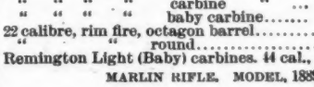
Colts' Lightning Magazine.

Discount 10 per cent

40/60 and 45/60 calibre octagon barrel...	10	lbs.	$15.38
" " " " round " ...	9¾	"	14.25
" " " " carbine " ...	9	"	14.25
32, 38, and 44 calibres, octagon " ...	7¼	"	13.50
" " " " round " ...	6¾	"	12.38
" " " " carbine " ...	6¼	"	12.38
" " " " baby carbine.....	5¼	"	12.38
22 calibre, rim fire, octagon barrel.....			15.38
" " round.....			14.25

Remington Light (Baby) carbines. 44 cal., nick. $7.50.

MARLIN RIFLE. MODEL, 1889.



The best in the market, embodying all latest improvements.

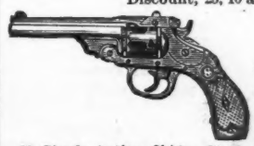
38 and 44 calibres, using the same cartridges as Winchester rifles of the respective sizes.

octagon barrel, 24 inch, 6¼ lbs.....			$19.50
" " 26 " 6¾ "			21.50
" " 28 " 7 "			23.50
Round " 24 " 6½ "			18.50
Carbine " 20 " 5½ "			17.50

Discount, 25, 10 and 10%.

REVOLVERS.

S & W.



32, Single Action, 3, 3¼ in., $8.00.
32, Double Action, 3, 3¼ in., $9.35.
32, Safety Hammerless, 3, 3¼ in., $11.00.

38, Single Action, 3¼ in., $9.40; 38, Single Action, 4 in., $9.65; 38, Single Action, 5 in., $10.00; 38, Double Action, 3¼ in., $10.40; 38, Double Action, 4 in., $10.65; 38, Double Action, 5 in., $11.00; 38, Safety Hammerless, 3¼ in., $12.00; 38, Safety Hammerless, 4 in., $12.25; 38, Safety Hammerless, 5 in., $12.50; 44, Single Action, 4 in., $11.50; 44, Single Action, 5 in., $11.75; 44, Single Action, 6, 6½

in., $12.00; 44, Double Action, 4 in., $12.50; 44, Double Action, 5 in., $12.75; 44, Double Action, 6½ in., $13.00; 44, Double Action Favorite, 5 in., $12.75.

Colts.

Discount, 10 per cent from following prices.

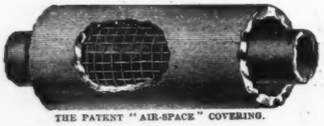
Double Action Army, 44 and 45 calibre, 4¾, 5½, 7½ inch bbl., $13.00.
Double Action, 41 calibre, 2½ to 6 inch bbl., $11.20.
" " 38 " 2½ to 6 " " $10.00.
Single " Army, 45 calibre, 4¾, 5½, and 7½ inch bbl., $12.00.
Single Action Army, 44 calibre, "Frontier," 4¾, 5½, and 7½ inch bbl., $12.00.
New Line, 41 calibre, blued or nickeled, $4.00.
" " 32 " " " 4.00.
" " 30 " " " 2.00.
" " 22 " half or full plate, 2.10.
Old Model, 22 calibre, by the hundred, half or full plate, $1.50.
Colt Deringer, 41 calibre, per pair half or full plete, 5.50.

American Bull Dog

Double Action 32, 38 and 44 calibre, 2½ inch barrel, $1.60; Double Action 32, 38 and 44 calibre, 4½ inch barrel, $1.85; Double Action 32, 38 and 44 calibre, 6 inch barrel, $2.10.

F. & W. British Bull Dog revolvers, 32 and 38 calibre 2½ inch bbl., $1.80.
F. & W. Automatic revolver, 32 and 38 calibre, 3¼ inch bbl. $5.50.
H. & R. Automatic revolver, 32 and 38 calibre, 3¼ inch bbl., $4.75.
Defender revolvers, Single Action, 22, wood handle, 65.
" " " " 22, rubber " 70.
" " " " 32, wood " 85.
" " " " 32, rubber " 90.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 5¾ inch barrel, $6.50.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 7½ inch barrel, $6.00.
Remin gton Double Deringers, 41 cal., rim fire, $4.05.
National Deringers, 41 calibre, per pair, half or ful late, $4.00.
New House, 41 or 38 calibre, blued or nickeled, $5.00.
" Police, 38 calibre, 6 in., " " 7.00.
" " 38 " 4½ in., " " 7.00.

Asbestos Goods.



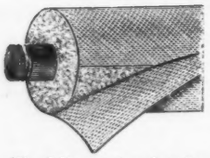
THE PATENT "AIR-SPACE" COVERING.

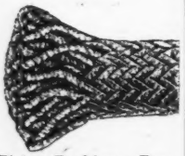
Patent air-space coverings. Per sq. ft., 25c. Discount, 20%.

Wick packing, per pound, 50c. Discount, 20%.

Removable pipe coverings. } Sq. ft. 20c. Disc., 20%.

Tube cleaner, "The National," Per inch, $1. Discount, 50%.

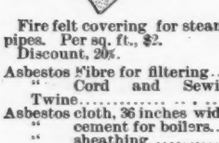




Fire felt covering for steam pipes. Per sq. ft., $2. Discount, 20%.
Piston Packing. Per pound, 50c. Discount, 20%.

Asbestos Fibre for filtering	per	lb.	40c.	disc 20%
" Cord and Sewing	"	"	$1.50	" 20%
Twine				
Asbestos cloth, 36 inches wide	per	yard	2.00	" 20%
" cement for boilers	per	bbl.	4.00	" 25%
" sheathing	per	lb.	.18	" 20%
" building felt	"	"	.14	" 20%
" hair felt for hot and cold water pipes	per	sq. ft.	.10	" 25%
Asbestos mill board	per	lb.	.18	" 20%
" soldering blocks	per	doz.	6.25	" 25%

Assay Furnace.
Hydro-Carbon Blow-Pipe Assay Furnace.



No. 2, Muffle Furnace taking C Battersea Muffle 8x4¾x3 in. $10.00
No. 3, taking F Muffle, 10x6x4 in. 15.00
No. 1, Crucible Furnace, taking Battersea, U or Colorado B Crucible, 4 in. dia. 5½ deep., 4.00
No. 2, taking Battersea round, 5 in. dia., 6¼ deep. 5.00

Blow-Pipe No. 1, with half gallon tank, made of plain, strong sheet metal 18.00
Blow-Pipe No. 2, with half gallon tank, made entirely of seamless brass 23.00
Blow-Pipe No. 3, with one gallon tank, otherwise same as No. 2 ..... 26.00
Blow-Pipe No. 1, Muffle Furnace No. 2, and Crucible Furnace No. 1 ..... 32.00
Blow-Pipe No. 2, Muffle Furnace No. 2, and Crucible Furnace No. 1 ..... 37.00

Axes, etc.
Axes, Handled.

Brands,	Collins. doz.	Sharp. doz.	Pecks. doz.
Dis., %	10	35	Net
3½@4½ lbs.	$10.75	$15.00	9.50
4½@5¼ lbs.	11.00	15.50	9.50
4¼@6 lbs.	11.50	16.00	10.00
5@7 lbs.	12.50	17.50	11.00

Brands,	Hurd. doz.	American Ideal. doz.	Blair. doz.	Freeman. doz.
Dis., %	Net	Net	Net.	Net
3½@4½ lbs.	$8.50	$11.00	$8.00	$6.5(
4¼@5¼ lbs.	8.50	11.00	8.00	7.00
4½@6 lbs.	8.75	11.25	8.25	7.00
5@7 lbs.	9.00	11.50	8.50	7.50

Brands,	Collins. doz.	Hunt. doz.	Sharp. doz.	Pecks. doz.
Dis., %	10	45	50	50
Three-quarter axe	$8.00	$13.50	$13.50	$13.50
Brands.				
Boys' axe, No. 2	8.00	13.50	13.50	13 50
Half axe	7.00	12.50	12.50	13.00
Quarter axe	6.50	10.00	10,00	11.00

Brands,	Collins. doz.	Hurd. doz.	Freeman. doz.
Dis., %	60 &	50 5	25
Three-quarter axe	$13.50	$13,50	$7.50
Boys' axe, No. 2	13.50	13.50	7.50
Half axe	12.50	12.50	6.50
Quarter axe	12.00	12.00	6.00

Hatchets, with handles.

AXE PATTERN. Both patterns, same price.

HUNTER'S.

	Collins.	Hunt.	Sharp.	Pecks.	Simmons.	Hurd.
Dis., %	10	45	50	45	50	50.5
Dozen	$6.00	$10,00	$10.00	$9.00	$9.00	$10.00

SHINGLING.

Shingling.

Brands.	Collins.	Sharp.	Pecks.	Mann.	Hurd.
Dis., %	10	50.5	50	50.5	50.5
No. 1 Doz	$4.75	$8.00	$8.00	$8.00	$8.00
No. 2 "	5,25	8.50	8.50	8.50	8.50
No. 3 "	5.75	9.00	9.00	9.00	9.00

CLAW.

Claw.

Brands.	Collins.	Sharp.	Blair.	Mann.	Hurd.
Dis., %	10	50, 5	60, 5	50, 5	50, 5
No 1. Doz	$5.25	$9.00	$9.00	$9.00	$9.00
No. 2. "	5.75	9.50	9 50	9.50	9.50
No. 3. "	6.25	10.00	10.00	10.00	10.00

LATHING.

Lathing.

Brands.	Collins.	Sharp.	Pecks.	Blair.
Dis., %	10	50, 5	50	60, 5
No. 1. Doz	$4.75	$6.75	$8.00	$8.00
No. 2. "	5.25	7.50	8.50	8.50
No. 3. "	5.75	8.25	9.00	9.00

BROAD.

Broad.

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Blair.
Dis., %	10	45	50	50	60, 5
No. 2. Doz		$11.50	$11.50	$11.00	$11.50
No. 3. "	7.50	13.00	13.00	13.00	13.00
No. 4. "	8.00	14.50	14.50	14.50	14.50
No. 5. "	9.0	16.50	16.50	16.50	16.50
No. 6. "	10.00	18.00	18.00	18.00	18.00

Broad Axes. Steel polls.

Brands.	Collins.	Hunt.	Sharp.	Pecks.
Dis., %	10	45	50	45
Dezen	$20.00	$30.00	$29.00	$32.00

YANKEE. OR OHIO. PENNSYLVANIA. NEW ORLEANS.

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Blair.	Mann.	Hurd.
Dis., %	10	45	50	45	60, 10	50	50, 5
Dozen	$19.00	$32.00	$32.00	$32.00	$32.00	$32.00	$32.00

Handled, extra, $4.

Adzes.

RAILROAD. Brands.	Collins.	SQUARE HEAD. Hunt.	Sharp.	SHIP CARPENTER'S. Pecks.	Hurd
Dis., %	10	45	50	50	50, 50
Rail'd, heavy, doz.	$14.00	$26.00	$26.00	$26.00	$26.00
Flat head "	15.00	24.00	24.00	24.00	24.00

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Hurd.
Dis., %	10	45	50	50	50, 100
Square head, doz	$12.50	$24.00	$24.00	$24.00	$24.00

Brands.	Collins.	Hunt.	Sharp.	Pecks.
Dis., %	10	45	50	45
Ship Carpenter's or Spur Head, doz	$13.00	$25.00	$25.00	$25.00

Brands.	Collins.	Hunt.	Sharp.
Dis., %	10	45	50
Cooper's, handled and bolted, doz.	$16.00	$27.00	$25.00

Axle Grease.
Frazer's (2-lb. tins), per gross $18.00
2-lb. wooden boxes, " 12.00
Discount, 25 and 5 %.
Dixon's Everlasting, boxes 1 lb., per doz $1.20
" " 2 lbs., " 2.00
See Oils, page 10.

Bellows.

Miner's Bellows: 24 in., $8.50; 26 in., $9.75; 28 in., $11.00; 30 in., $11.25; 32 in., $13.50.
60 and 5% dis.
Standard, each: 18 to 24 in., $10; 28 in., $12; 32 in., $14; 34 in. $16; 36 in., $18; 38 in., $20; 40 in., $23; 44 in., $32.
60 and 5% dis.
Hand Bellows, per doz.: 6 in., plain, $10; fancy, $20; 7 in., plain, $12; fancy, $24; 8 in., plain, $14; fancy, $28; 9 in., plain, $16; fancy, $32; 10 in., plain, $18; fancy, $36.
50% dis.

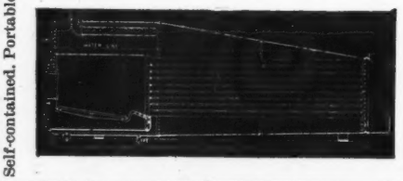
Belting. LEATHER BELTS.
Standard Manufacturers List.
Single belts per foot.

Width.		Width.		Width.	
1 inch	.10	6 inch	.76	20 inch	2.84
1¼ "	.13	7 "	.90	21 "	3.02
1½ "	.17	8 "	1.02	22 "	3.20
1¾ "	.20	9 "	1.15	23 "	3.37
2 "	.23	10 "	1.29	24 "	3.54
2¼ "	.26	11 "	1.42	26 "	3.92
2½ "	.30	12 "	1.55	28 "	4.30
2¾ "	.33	13 "	1.68	30 "	4.64
3 "	.36	14 "	1.82	32 "	5.00
3½ "	.43	15 "	1.98	34 "	5.35
4 "	.50	16 "	2.14	36 "	5.70
4½ "	.56	17 "	2.31	40 "	6.40
5 "	.63	18 "	2.49	44 "	7.10
5½ "	.70	19 "	2.66	48 "	7.80

Double belts twice the price of single.
Dis. single and double belts, cemented, 50 and 5%.
Dis. single and double belts, riveted and cemented, 50 and 5%.
Dis. single belts, cemented and lacesewn, water proofed, 50%.
Dis. double belts, cemented and lacesewn, water proofed, 45%.
See Rubber Belting, page 7.
See Link Belting, page 9.

Boiler (Scotch Flue).

Self-contained. Portable.



Durable. Economical.

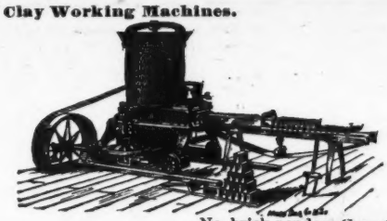
Horse power	8	10	15	20	25	30	35
Diameter	28"	32"	32"	36"	40"	40"	44"
Length, feet	9½	10	12½	13¼	14¾	16¾	16¾
Weight, pounds	3500	4000	4500	5 00	6500	6900	7500
Price, $			387	487	580	634	767
Horse power	40	45	50	55	60	70	80
Diameter, inches	44	48	48	52	52	56	56
Length, feet	17½	16½	18	17½	18½	18	19
Weight, pounds	8000	8500	8800	9500	10,000	11,000	12,000
Price, $	827	920	1027	1147	1227	1387	1500

Discount, 15%.

Brick Machinery.

Heavy Steam Power Machine	$525.00
Horse-Power Machines	300.00
Additional Horizontal Pugmill	225.0
Brick Moulds	$2.50 to $3.00
Brick Trucks	5.00 to 13.50
Brick Barrows	7.25
Brick Barrows with Springs	8.20
Sand Barrows, steel tray	6.40

Clay Working Machines.



	No. brick per day.	Compl'te.
No. 10 D brick machine	50,000	$1,500
No. 10 S " "	30,000	1,200
No. 4 " "	40,000	1,100
No. 7 S " "	20,000	650
No. 6 S " "	15,000	575
No. 2 E. H. P. "	6,000	3,360

Brushes.

PAINT BRUSHES.
Intermediate prices not quoted.
Prices per dozen.

	No. 6.	4.	2.	0.	3-0.	5-0.	7-0.	Dis
X	$1.15	$1.80	$2.50	$3.15	$4.00	$5.25	$6.75	25%
Atlantic	1.25	2.15	3.80	5.25	7.00	10.00	13.00	25%
Standard	1.60	2.60	4.00	6.00	8.00	11.00	16.00	25%

VARNISH OVAL.

	No. 6.	4.	2.	0.	3-0.	5-0.	7-0.	Dis.
Globe	$1.15	$1.80	$2.50	$3.25	$4.60	$6.00	$8.00	25%
Crown	1.25	2.00	2.75	4.00	5.25	7.00	10.00	25%

VARNISH FLAT.

	No. 1.	1½.	2.	2½.	3.	Dis.
X	$0.48	$0.72	$0.96	$1.20	$1.40	25%

SASH BRUSH.

	No. 1.	3.	5.	7.	9.	Dis.
X	$0.25	$0.40	$0.60	$0.85	$1.20	25%
XX	0.40	0.75	1.10	1.40	2.00	25%

WHITE-WASH.

	No. 6.	7.	8.	Dis.
Brown	$1.25.	$1.60	$2.00	25%
Pure	2.40	4.00	6.00	25%

SHOE

Per gross.

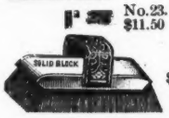
8.	9.	25.	15.	26.	Dis.
$10	$11.50	$12.50	$15	$18	25%

Per gross dis., 25%.

No. 23.	27.	32.	29.	35.
$11.50	$20.00	$24.00	$28.00	$31.00

HORSE.

Patent.



Per gross, dis., 25%.

$18.00	$20.00	$24.00	$30.00

Per gross, dis., 25%.

Wood back	$12	$15	$18	$24

Per gross, dis., 25%.

Leather back.	$24	$31.50	$42	$54

SCRUB.

Patent.

Per gross, dis., 25%.

$10.00	$12.00	$16.00	$18.00

Per gross, dis., 25%.

$6.50	$8.50	$12	$14	$18

SHAVING.

Per doz., dis., 25%.

$0.36	$0.60	$1.00	$1.50	$2.50

COUNTER.

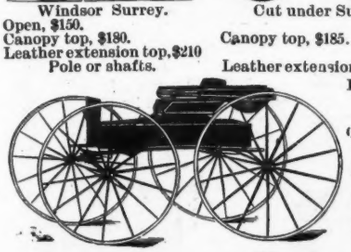
Per doz., dis., 25%.

$2.00	$3.00	$4.00	$5.00

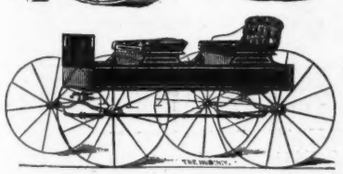
Carriages, Etc.

Windsor Surrey.
Open, $150.
Canopy top, $180.
Leather extension top, $210
Pole or shafts.

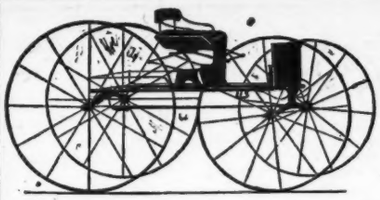
Cut under Surrey.
Canopy top, $185.
Leather extension top, $220
Brewster Spring.



Open, $65.
Rubber top, $80.
Leather top, $110.



Runabout, $65.



Buckboard. $30 ; shafts.

No. 0. Cart, top and fenders $150
No. 1. Cart, top and fenders 90
No. 2. Cart, one man cart, open 65
No. 2. Cart, one man, top. 86
No. 2. Cart, one man, top and fenders 90
No. 3-H. Cart, two man, open 54
No. 4. Cart, two man, top. 86
No. 5. Cart, two man, top and fenders 90
No. 6. Cart, two men, top and fenders 90
No. 7. Two man combination cart 110
Wide track 5 feet.
Narrow track 4 feet 8 inches.
Discount 33⅓ per cent. off.

Crucibles.

Battersea Crucibles, Triangular.

No.	Height. Inches.	Width. Inches.	Crucibles. Per doz.	Covers. Per doz.
S	4½	4½	$1.00	$0.50
T	4	3¾	0.80	0.50
U	3½	3¼	0.60	0.40
V	3¼	2⅞	0.45	0.40
W	2⅞	2⅝	0.35	0.30
X	2½	2¼	0.30	0.30
Y	2⅛	2⅛	0.25	0.30
Z	1¾	1¾	0.20	0.30

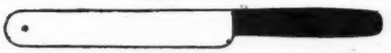
Battersea Muffles, any size, made to order.
See Illustration in advertisement.

No.	Long. Inches.	Wide. Inches.	High. Inches.	Price. Each.
A	7	3½	2½	$ .60
B	7½	4⅜	2⅞	.75
C	8	4¾	3	.85
D	8½	5	3¼	1.00
E	9	5½	3⅝	1.15
F	10	6	4	1.25
G	11	4	3⅛	1.00
H	10½	5¼	3⅞	1.00
J	12	6	4	1.25
K	14	8	5	1.75
L	15	9	6	2.00

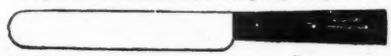
Export discount 15 %.

Cutlery.

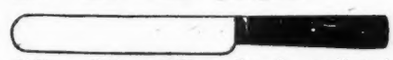
KNIVES—TABLE.



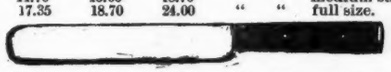
Japanned iron handles, $10.70 per gross pairs.



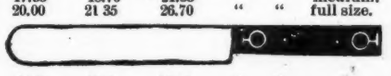
Cocobola handles.	Ebony handles.	Bone handles.	
10.70	12.00	15.35	gross pairs.



14.70	16.00	18.70	"	"	medium size.
17.35	18.70	24.00	"	"	full size.

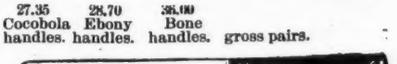


17.35	18.70	21.35	"	"	medium.
20.00	21 35	26.70	"	"	full size.

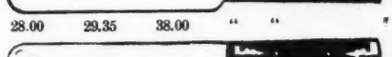


22.70	24.00	29.35	"	"

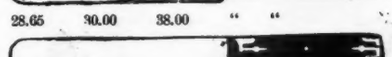
Cocobola handles.	Ebony handles.	Bone handles.	
27.35	28.70	36.00	
28.00	29.35	38.00	" "



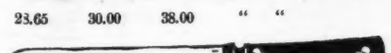
28.65	30.00	38.00	" "



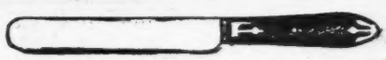
23.65	30.00	38.00	" "



32.00	33.35	38.00	gross pairs.

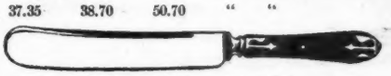


34.70	36.00	48.00	

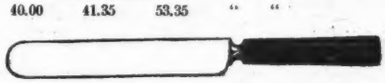


33.35	34.70	46.70	" "

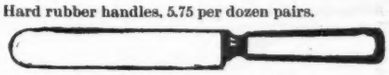
37.35	38.70	50.70	" "



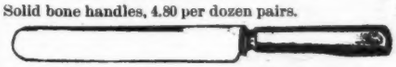
40.00	41.35	53.35	" "



Hard rubber handles, 5.75 per dozen pairs.



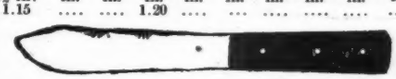
Solid bone handles, 4.80 per dozen pairs.



Celluloid handles, 7.35 per dozen pairs.
Forks are made to match all above patterns, with either three or four prongs.
Discount 25 %.

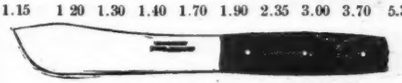
BUTCHERS'—COCOBOLA HANDLES.

	Per dozen.								
4 and 4½ in.	5 in.	5½ in.	6 in.	6½ in.	7 in.	8 in.	9 in.	10 in.	12 in.
1.15	....	....	1.20	....	....	....	....	....	....

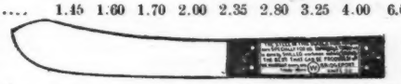


1.40	...	....	1.50	....	...	....	....	....	....

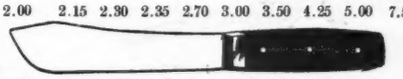
1.15	1 20	1.30	1.40	1.70	1.90	2.35	3.00	3.70	5.35



....	1.45	1.60	1.70	2.00	2.35	2.80	3.25	4.00	6.00



2.00	2.15	2.30	2.35	2.70	3.00	3.50	4.25	5.00	7.50



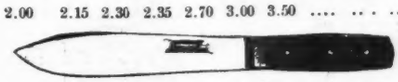
2.45	2.70	2.95	3.15	3.45	3.70	4.35	5.00	6.00	

2.10	2.20	2.35	2.50	2.80	3.40	4.35	5.30	6.85	....

3.40	3.55	3.70	4.10	4.60	5..30	7.00	8.75	11.00	

....	4.10	4 25	4.40	4.80	5.30	6.00	7.75	9.50	12.50

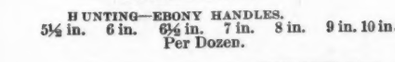
2.00	2.15	2.30	2.35	2.70	3.00	3.50	....	....	....



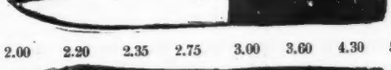
Discount 25 and 10 %.

HUNTING—EBONY HANDLES.

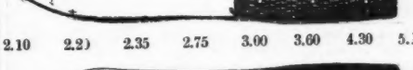
5½ in.	6 in.	6½ in.	7 in.	8 in.	9 in.	10 in.
Per Dozen.						



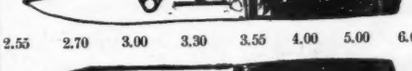
2.00	2.20	2.35	2.75	3.00	3.60	4.30	5.25



2.10	2.20	2.35	2.75	3.00	3.60	4.30	5.25



2.55	2.70	3.00	3.30	3.55	4.00	5.00	6.00



2.55	2.70	3.00	3.30	3.55	4.00	5.00	6.00

Discount, 25 and 10 %.
Per Dozen.

Putty knives, cocobola handles..... ..... $1.30@$1.50

SHEARS.

TAILORS'—JAPANNED OR NICKEL HANDLES.

Per pair.

12 in	6.00		
12½ in	7.00		
13 in	8.00		
13½ in	9.00		
14 in	10.00		
14½ in	11.00		
in	12.00	16 in	14.00

Discount, japanned, 60 %; nickle, 45 %.

BENT TRIMMERS.

Per dozen.

6 in	13.00	10 n	27.00
7 in	15.00	11 in	30.00
8 in	17.00	12 in	33.00
9 in	22.00		

STRAIGHT TRIMMERS.

Per dozen,

6 in	12.00	10 in	25.00
7 in	14.00	11 in	30.00
8 in	16.00	12 in	33.00
9 in	19.00		

LADIES' SCISSORS.

Per dozen.

4½ in	10.00	6 in	11.00
5 in	10.00	6½ in	12.00
5½ in	10.50	7 in	13.00

PAPER AND BANKERS'.

Per dozen.

9 in	18.00	13 in	36.00
10 in	25.00	14 in	42.00
11 in	27.00	16 in	54.00
12 in	32.00	18 in	20.00

BARBERS—Per dozen.

7¾ in	15.00	9 in	18.00
8 in	16.00	9½ in	20.0
8½ in	17.00		

SCISSORS.

BUTTON-HOLE.

5 and 5½in., 14 00 per dozen.

Discount, japanned, 70 and 10 % nickel, 60 and 10 %

PRUNING.

1 B., 9 in., 24 per dozen; 2 B. 8½ in., 21; 3 B., 7¾ in., 9.80.

No. 110, 10 in., $30 per doz.

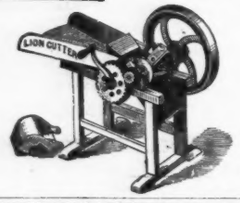
PRUNING SHEARS FOR LONG HANDLES.

No. 1, $36 per dozen; No. $30 per dozen.

Discount, 35%.

Cutters.

FEED.



No. of cutter.	No. of knives.	Length in inches of knives.	Length in inches of feed cut.	Price.
1	2	6¼	⅛, ¾ and 1⅛	$18.00
2	2	7¼	⅛, ¾ and 1⅛	21.00
2½	1	7¼	⅝, ⅞, 1¼ and 1¾	21.00
2½	2	7¼	⅛, ⅛, ⅝ and ⅞	23.00
3	1	8½	⅝, ⅞, 1¼ and 1¾	25.00
3	2	8½	⅛, ⅞, ⅝ and ⅞	27.00
4	1	10	⅝, ⅞, 1¼ and 1¾	30.00
4	2	10	⅛, ⅛, ⅝ and ⅞	33.00
5	2	10	⅛, ⅝, ⅞ and 1⅛	35.00
6	2	11	⅛, ¾, 1¼ and 2	45.00
6½	2	11	⅛, ¾, 1¼ and 2	45.00
7	2	13	⅛, ¾, 1¼ and 2	60.00
7½	2	13	⅛, ¾, 1¼ and 2	60.00
10	2	16	⅛, ¾, 1¼ and 2	80.00
12	2	20	⅛, ¾, 1¼ and 2	100.00
11	2	11	⅛, ¾, 1¼ and 2	45.00
13	2	13	⅛, ¾, 1¼ and 2	60.00
16	2	16	⅛, ¾, 1¼ and 2	80.00
20	2	20	⅛, ¾, 1¼ and 2	100.00

The knife arbors for all sizes are made of machinery steel. 30 per cent. dis

VEGETABLE—GALE'S.

Size.	Weight of Fly Wheel. Pounds.	Will cut per hour. Pounds.	Price
No. 1½	20	1,500	$12
No. 2½	32	1,700	15
No. 3½	32	1,700	15
No. 4	42	2,000	18
No. 5	50	3,000	25
No. 10	65	8,000	35

30% dis.

Drill—Portable Hand Rock.

Price, $225.

Dis., 20%.

Electrical Appliances.

20,000 ohm Testing Generator	$10.00
Pony Magneto Bell	6.00
Standard Magneto Bell	7.50
Standard Extension Bell	4.00
Pony Extension Bell	3.00

Discount 40 per cent.

Electroplate.

Dis. 60 and 2%.

	Extra plate, per doz.	Double plate, per doz.	Triple plate, per doz.
Oyster forks	7.00	9.00	11.00
Sugar shells	9.00	11.00	13.00
Sugar tongs	25.50	31.50	37.50
Butter knives, twist or reversed handles	10.50	12.50	14.50
Nut picks	4.75	6.00	7.25
Pie knives, engraved blades.	42.00	51.00	60.00
Soup ladles	48.00	60.00	72.00

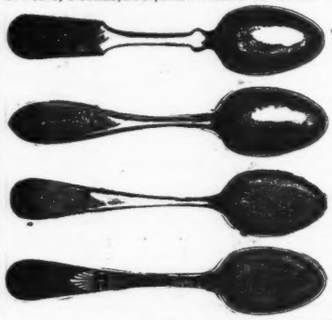
Aesthetic medium fork.

Tea spoons.	Table spoons.	Medium forks.
7.50	15.00	15.00 per gross.

Discount, 30 and 5 %.

Children's sets *on cards*.	3 pcs.	4 pcs.	
Leader pattern, as per cut	21.00	24.00 doz.	60 and 5 %
Aesthetic pattern, as per cut	5.75	7.25 doz.	30 and 5 %

SPOONS, FORKS, ETC., BEST PLATE ON HARD WHITE METAL



Tipped Tea Spoon.

Oval Tea Spoon.

Perfect Tea Spoon.

Leader Tea Spoon.

	Tipd	Oval.	Perfect and Leader.
	5 oz. or extra plate		
Tea spoons	4.25	4.50	4.75 per doz
Dessert spoons	7.50	8.00	8.50 " "
Table spoons	8.50	9.00	9.50 " "
Coffee spoons	4.25	4.50	4.75 " "
Dessert forks	7.50	8.00	8.50 " "
Medium forks	8.50	9.00	9.50 " "

Discount, 60 and 5%.

Spoons and forks, German silver, tipped pattern.

Tea spoons.	Table spoons.	Medium forks.
22.50	45.00	45.00 per gross.

Discount, 60 %.

Spoons and forks, made from brass, and silver plated a coating of hard, white nickel.

CASTERS.

1,200—Dinner

232—Breakfast.

Dinner Casters.

No. 1,200. 17½ in. high, $8.00, quadruple plate.
No. 80. 17 in., $6.00, quadruple plate.
No. 140. 16 in., $7.50,
No. 830. 16 in., $5.00, Plain, 50 cents less.
No. 25. 16 in., $4.00, double plate.
No. 33. 16 in., $3.75, " "
No. 53. 15 in., $3.00, " "
No. 15½. 14½ in., $2.00, single plate.
No. 19. 14½ in., $1.85, " "
No. 40. 14 in., $1.75, " "

FLAT WARE.

Calla Lily, Empress, Windsor and Olive Patterns, 18 Per Cent Nickel Silver Base.

PICKLE DISHES

No. 146.

No. 144. 12 in. high, $3.50
No. 66. 10½ in. high, $2; assorted colored glass.
No. 155. 12 in. high, $4; assorted colored glass.
No. 146. 12½ in. high, $9; hand decorated glass.
No. 156. 12½ in. high, $6; hand decorated glass.

No. 255.

TEA SETS.

No. 255. 6 pieces, $35, quadruple plate.
No. 301. 4 pieces, $23, quadruple plate.
No. 1847. 6 pieces, $42, quadruple plate.

Engineering Instruments.

Full Engineer's Standard Transit.	
7 in. graduated circle	$255
6 in. " "	245
5 in. " "	235
4 in. " "	225
Standard Engineer's Level, improved centre and seat attachment, 18 in. telescope	140
Plain railroad level, 18 in. telescope	125

Explosives.

Dynamite, 75%	Nitro-Glyceine, per lb	.32
" 60%	" " "	.25
" 40%	" " "	.20
Blasting powder A, per keg 25 lbs		$2.40
" B, " "		1.90
Sporting powder, standard brands, per keg 25 lbs		5.00
" " " "	12½ lbs.	2.75
" " " "	6¼ lbs.	1.50
" " high grades "	6¼ lbs.	3.00
" " " per can	1 lb	60
" " fancy brands "	1 lb	1.00

Discounts special for quantity.

Safety fuse, cotton, 12 M ft. in case		$2.85 per M ft.
" " single tape, 6 M ft. in case		4.25 " "
" " double tape " "		5.40 " "
" " triple tape " "		6.50 " "

Discount 17½%.

Detonating caps, triple force, 25 M. in case	$5.00 per M.
" quintuple force, 25 M. in case	7.50 per M.
Electrical exploders, 4 ft. wires	$3.00 per 100
" " 6 "	3.54 "
" " 8 "	4.08 "
" " 10 "	4.62 "

Discount 15%. Long lengths to order.

	No.	Capacity.	
Magneto Blasting Machines	1 V.	8 holes	$17.00
" " "	2 V.	20 "	25.00
" " "	3 L.	20 "	25.00
" " "	3 V.	30 "	30.00
" " "	4 V.	60 "	50.00

Discount 15%.

Blasting cables	$5.00 each, discount 40%
" reels	5.00 " " 20%

20-inch New Era Mill for Wheat, Corn, and Middlings.

Size. Inch.	Power. H. P.	Pulley. Inch.	Capacity Bush.
20	4 to 10	14×7	12 to 40

Speed.	Weight. Lbs.	Price.
500 to 800	660	$150

Farm and Plantations Mills.

Diameter of burrs.	Power to drive.	Size of pulley.	Capacity per hour.	Revolutions per minute.	Weight.	Price.
	H. P.					
14 in.	2 to 4	9×5½	4 to 14 bushels	600 to 1200	370 lbs.	
18 in.	4 to 10	11×6½	8 to 40 bushels	400 to 700	600 lbs.	

The Dixey Mill—Stiff Spindle Style.

Size.	Power.	Capacity.	Weight. Pulley.	Weight. Geared	Pulley.	Iron gear.	Mortise gear.
18	4 to 6H.P.	8 to 25 bu	560 lbs	650	$130	$165	
22	6 to 8 "	12 to 30 "	800 "	1000	165	200	
26	8 to12 "	16 to 40 "	1100 "	1500	185	220	
30	10 to15 "	25 to 60 "	1300 "	1700	215	255	

Flour Mills.

For grinding corn, feed, rye, etc.
Gray's pat. noiseless belt roller-mills, porcelain rolls.

Size of Rolls.	Length.	Width.	Revolutions per minute.	H. power required.	Price.
With corrugated chilled iron rolls.					
14" × 16"	3' 2"	4' 5"	200 to 300	2½	$600.00
14" × 18"	3' 6"	4' 10"	200 " 300	4	800.00
9" × 14"	3' 10"	3' 10"	300 " 400	2½	580.00
With Wegmann's patent porcelain rolls.					
9" × 14"	3' 10"	3' 10"	300 to 400	2½	$600.00
Divided four roller machines.					
9" × 14"	3' 10"	3' 10"	300 to 400	2½	$650.00
14" × 16"	3' 10"	3' 10"	300 to 400	2½	$590.00
14" × 18"	3' 10"	3' 10"	300 to 400	2½	615.00
14" × 24"	3' 10"	3' 10"	300 to 400	2½	625.00

Size.	Height.	Width.	Length.
6" × 12"...	4' 6"	3' 5"	2' 7"
9" × 14"...	5' 8"	3' 10"	3' 5'
9" × 18"...	5' 8"	4' 9"	3' 5'
9" × 24"...	5' 8'	5' 6"	3'

The Nordyke Bradford Portable Mill.

Size of stones, In.	Grinding capacity. Corn, bu. per hour.	Grinding capacity. Wheat bu. per hour.	Horse-power.	Weights. Sing'l gear.	Weights. Double gear.	Pulley mill.	Geared mills. Iron wh'ls.	Geared mills. Mortise wh'ls.
18	8 to 10	.....	4	550	625	$130	$165	$180
20	10 to 12	.....	5	600	700	140	175	190
22	12 to 15	.....	5	700	850	160	190	210
24	15 to 18	.....	6	900	1050	175	210	225
26	18 to 20	8 to 10	8	1200	1400	185	225	250
30	20 to 25	10 to 12	10	1500	1700	225	265	290
36	25 to 30	14 to 17	12	1800	2100	315	355	380
42	35 to 40	19 to 21	15	2000	2300	390	435	460

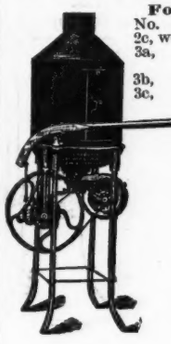
Driving pulley.	Revolutions per minute.	Length of belt above floor.	Approximate shipping weight	Price.
10" × 5¼"	400 to 500	14'	.....	$500.00
14" × 6¼"	350 to 450	18'	2800 lb.	600.00
14" × 7¼"	350 to 450	18'	3050 lb.	650.00
14" × 8¼"	350 to 450	18'	3350 lb.	735.00

Flue Cleaner.
Hurley's Automatic Steam Flue Cleaner.

No.	Outside diam. of tubes.	With hose clamps.	Globe Valves.	Best 4-ply steam hose. Per foot.
1	1½ to 2	$5.00	½ 95 cents	¾ 67 cents.
2	2 to 2½	6.25	½ 95 cents	¾ 67 cents.
3	2½ to 3	7.50	¾ $1.30	¾ 67 cents.
4	3 to 3½	8.75	1 1.75	1¼ 83 cents.
5	3½ to 4½	10.00	1¼ 2.90	1¼ $1.04

Dis. on flue cleaners, 60 and 70%.
Dis. on steam hose, 50%, good to 90 lbs steam.

Forges (Portable).



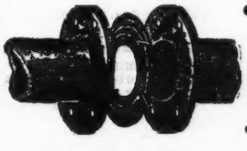
No.
2c, weight, 155 lbs. 21×27 hearth ..$42.00
3a, " 80 " 18 in. diam. hearth..... 27.00
3b, " 75 " 18 " 24.00
3c, " 85 " 18 " 30.00
No. 6a, weight 45 lbs., 14 in. diam. hearth..... 18.00
No. 6B, weight 45 lbs. 14 in. diam. hearth..... 16.00
Dis. 60%.
Light work, 12 × 17; height, 15 in., $16.00.
Same, with Hood, 12 × 17; height, 28 in., $20.00.
Bridge, Boiler or Railroad work, Pan, 17 × 19; height, 29 in.; Fan, 8 in., $27.00.
Same, with Hood, $30.00.
Water Tank, $4.00 extra.
Iron Fire Ring Round Tuyere, $1.00 extra.
50 % dis.

No. 1, 18 in. bellows, $20; No. 2, 20 in. bellows, 25; No. 3, 22 in. bellows, $30.
20% dis.
Stationary.
27 in. bellows, $21; 30 in. bellows, $25; 33 in. bellows, $33; 36 in bellows, $45.
20% dis.

Riveting Forges.
Bellows, 18 in., 20 in., $8.00. $10.00. 22 in., 24 in., $13.00. $17.00.
20 % dis.

Fruit Evaporator.

No. 1. Evaporator..... $30
No. 2. Fruit Drier and Baker, with Bleacher attachment. Weight, 225 lbs. Capacity, 5 to 7 bushels apples per day; 24 in. deep, 26 in. wide, 5½ ft. high; 12 trays, 22 × 22; 40 square feet drying surface. Complete..... $50
No. 3. Capacity, 15 to 20 bushels per day..... 100
No. 4. Capacity, 20 to 30 bushels per day..... 160
Dis., No. 1, 3 and 4 = 20%. No. 2 = 30%.
Boxing, extra:
No. 1, $3.00; No. 2, $5.00; No. 3, $7.50; No. 4, $12.50.
Freight to New York:
No. 1, $4.00; No. 2, $6.00; No. 3, $12.00; No. 4, $18.00.



Gaskets.
Corrugated Copper.
Price, 2 cents per square inch, less 30 per cent. discount for home trade.
Less 60% discount for export trade.

Glass Tube Cutters.

One Arm Carries Rotary Cutter Price, $2.50 each.

Glassware.

6-in. bowl and cover, per doz.....$3.25
7-in. " " " " 4.50
8-in. " " " " 6.00
9-in. " " " 8.00
10-in. " " " 10.50
Net.

Nappy, 4½-inch., per doz., 50c.; 6-inch., per doz., $2 nch ., per doz., $3; 8-inch., per doz $4.
Cream Pitcher, 1 pint, per doz., $1.25; one quart, per doz., $3.50; 3 pints, per doz., $4.50.
Pint Pitcher, per doz., $1.50; quart pitcher, per doz., $2; ½ gallon pitcher, per doz., $3; 3 quart pitcher per oz., $4.50.

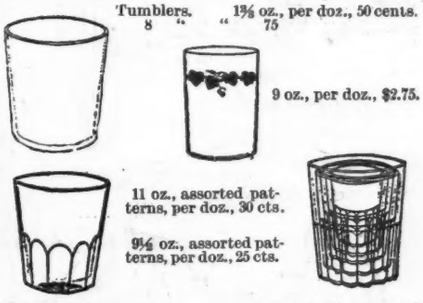
Flange Butter and Cover, per doz., $1.75.
Water Set, perdoz., sets of 60 pieces, $7.50.

Cheese Dish and Cover, 8 in. per doz., $4.50.
Quart Water Bottle, per doz., $4.50.

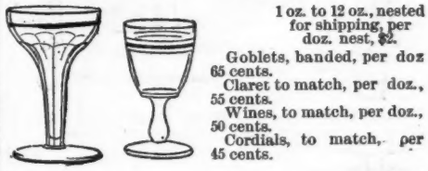
Ind. Salts; per gross, $2.00. Assorted patterns.
4 Bottle Castors, per doz., $7.50; 3 bottle, per doz., $4.50.

Berry Dish, 4½-inch , per doz., 50c.; 10-inch, per doz., $4.
Butter Dish and Cover, per doz., $1.25.
Butter Dish and Cover, per doz., 75c.

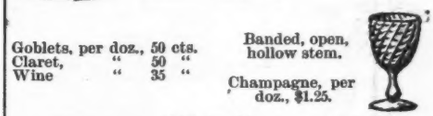
Candlesticks, per doz., $2.00. Glass Slipper for Flowers, per doz., 50 cents; slipper and tray, per doz., $1. Jam Jar and Cover, 1 qt., per doz., $2.50; ½ gal., per doz., $3.25; ¾ gal., per doz., $4 ; 1 gal., per doz., $5 ; 1½ gals., $9 ; 2 gals., per doz., $12. Pocket Flask, 1 pint, $1.



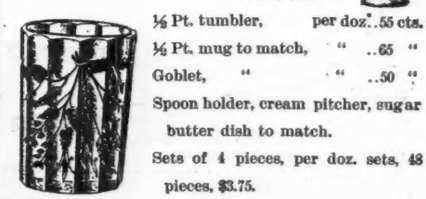
Tumblers. 1½ oz., per doz., 50 cents.
8 " " 75
9 oz., per doz., $2.75.
11 oz., assorted patterns, per doz., 30 cts.
9½ oz., assorted patterns, per doz., 25 cts.



1 oz. to 12 oz., nested for shipping, per doz. nest, $2.
Goblets, banded, per doz 65 cents.
Claret to match, per doz., 55 cents.
Wines, to match, per doz., 50 cents.
Cordials, to match, per 45 cents.



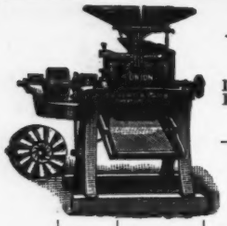
Goblets, per doz., 50 cts.
Claret, " 50 "
Wine " 35 "
Banded, open, hollow stem.
Champagne, per doz., $1.25.



½ Pt. tumbler, per doz. 55 cts.
½ Pt. mug to match, " .65 "
Goblet, " " .50 "
Spoon holder, cream pitcher, sugar butter dish to match.
Sets of 4 pieces, per doz. sets, 48 pieces, $3.75.

Grinding Mills.

"Daisy," without Shaking Bolt, 170 pounds, 9 cubic feet, $40.
"Daisy," with Shaking Bolt, 185 pounds, 9 cubic feet, $48.
Discount 25 per cent.

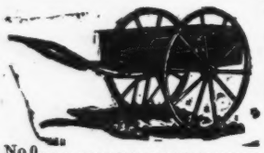


"The Union Mill."

Diameter of Buhr Stones	Size of Pulleys	
	Diam.	Face.
12 in.	8 in.	6¼ in.
16 "	9 "	7½ "

Horse Power	Capacity in B'sh's	Speed	Without Bolt	With Bolt	Sacking Elevator, Extra	Extra Metal Buhrs
8 to 10	12 to 30	1200 to 1500	$90.00	$105.00	$15.00	$1.20 pair
10 to 15	20 to 50	1000 to 1600	160.00	178.00	17.50	1.50 "

Hand Carts No. 0 42 wheel in. tread, 1 in. axle-box 48x28x10 deep, $10.50.



No. 1, 36 wheel, 1 in. tread, ⅞ in. axle, box 40x23x10 deep, $9.00.

No. 2, 30 wheel, ¾ in. tread, ¾ in. axle, box 32x20x9 deep, $8.25.

With Wagon-Seat Spring.

No. 6, same sizes as No 0.....$12.00
" 7, same sizes as No. 1..... 10.50
" 8, " " " No. 2..... 9.75

With Third Wheel, Without Springs.

No. 3, same sizes as No. 0.....$12.00
" 4, " " " No. 1..... 10.50
" 5, " " No. 2..... 9.50

Hardware Specialties.

AUGERS.

Patent Adjustable Hollow.

Cuts from ¼ to 1¼, pivoted jaws, graduated scale to 1-16ths, per doz., $60.00

Discount, 15 and 10%.

Patent Hollow Auger.

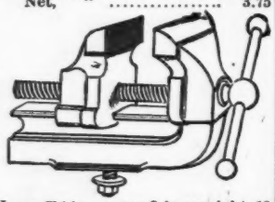
Inch.....	5-16	⅜	7-16	½
With bits....	12.00	12.00	12.00	12.00
Without bits	8.00	8.00	8.00	8.00
9-16	⅝	¾	⅞	1
14.00	14.00	14.00	16.00	16.00	20.00
9.00	9.00	9.00	13.00	13.00	14.00
1¼	1⅜	1½			
20.00	24.00	24.00			
14.00	16.00	15.00			

Discount, 15 and 10%.

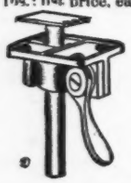
BENCH DRILL.

Adjustable bed plate. 26½ high drills to ½ in. hole, 3¼ run of screw.

List price, each.....$10.00
Net, " 3.75

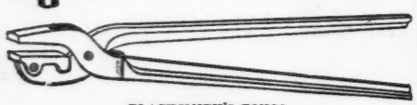


Bench Vise, Steel Jaws, 3¼ in., opens 3 in.; weight, 12 lbs.: list price, each, $4.00.; net price, each, $1.60.



BENCH HOOK.

Patent, adjustable and reversible List $9 dozen, ½ dozen in box. Discount, 20 and 10%.



BLACKSMITH'S TONGS.

Swivel Jaw.

No. 1, 16 in., per doz.....$10.00
" 2, 18 " " 10.00

Dis. 20%.

CASTERS.

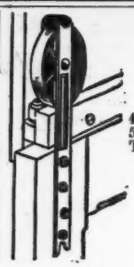
Swivel Store Truck

No. 20, japanned, 4 in. wheel, each..... .55
No. 25, " 5 " " " ..... .75

Noiseless turned wheel.

No. 30, japanned, 4 in. wheel, each..... 1.30
No. 35, " 5 " " " 1.60

Discount, 25%.



BARN DOOR HANGER.

4 in., per doz. pairs.....$12.00
5 " " 14.40
Track, per foot..... .08

One dozen pairs in case. Dis., 50%.

CLOTHES REEL.

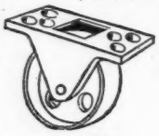
Extra heavy, gray iron, japanned.
List per doz.....$15.00
Net 7.00

JACK SCREWS.

New pattern wrought iron screw.

No.	Rise of screw.	High.	Diameter screw.	Price.
20	4½ in.	10 in.	2 in.	$4.50
25	6½ "	12 "	2 "	5.25
30	8½ "	14 "	2 "	5.75
35	11½ "	16 "	2 "	6.50

Discount, 40%.

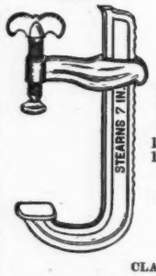


Store Truck, stationary.

No. 50, 5-inch wheel, 1½ inch wide each, $1.05.

No. 60, 5-inch, extra heavy, 1½ inch wide, each $1.50.

Discount, 25%.



SCREW CLAMPS.

Adjustable.

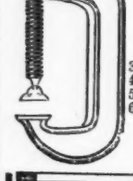
3 in., per doz.....$4.00
5 " " 6.50
7 " " 9.00
9 " " 10.50
12 " " 15.00
16 " " 20.00

⅛ doz. in box. Discount, 20 and 10%.

CLAMPS.

New Door Frame.

3 ft. long, per doz., $8 list; $5 per doz. net.



Malleable Iron Screw Clamps.

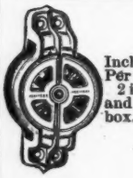
Per Doz.		Per Doz.	
3 in.....	$7.00	7 in.....	$20.00
4 "	10.00	8 "	25.00
5 "	12.00	9 "	27.50
6 "	16.00	10 "	30.00

3, 4, 5, 6 in., ⅛ doz. in box. Dis., 70%.

WINDOW SCREEN FRAMES.

Patent Japanned Corners.

No. 25, 36 by 36 corners and screws, without bead, per doz., $2.50.
No. 25, 36 by 36 corners and screws, with bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, without bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, with bead, per doz., $3.30.
Black satin stain, sticks ⅞ by 1 in. Dis., 20 %.



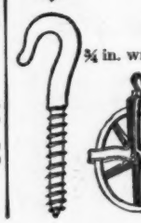
PULLEYS.

Side, No. 45, Japanned.

Inches...	1	1¼	2	2½	3	4	5
Per doz..	.90	1.00	1.60	2.40	3.50	9.00	15.00

2 inch and under, 2 dozen in box: 2½, 3 and 4, 1 dozen in box; 5 inch, ½ dozen in box.

Discount, 50%.



PULLEY HOOK (New Floor.)

Deep cut thread, forged point.

Per doz.
¾ in. wrought iron, 8 in. long, list..... $1.90
net..... 1.00

WELL WHEEL.

New pattern.

Japanned.

In.	8	10	12	14	16
Pr.d.	7.00	9.50	12.50	20.00	30.00

Discount, 70%.

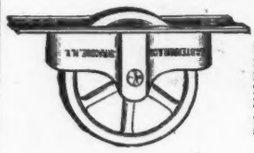
HAY FORK PULLEY.

New pattern.

No. 15, 5 in. iron wheel.....per doz. $4.50
25, 5 in. wood " ..... " 4.50
66, 6 in. " " ..... " 6.00

4 dozen in case, 8 dozen in barrel.

No. 15, per dozen, $2 net.



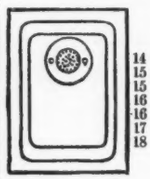
SHEAVES.

Patent Common

Turned and polished iron wheels, round corners, brass pin, one set in box.

2½ inch.....$1.50
3 " 1.60
4 " 2.00
5 " 2.60

Discount, 50%.



SINKS.

All 6 inch deep.

14 × 20 in....	$1.50	18 × 30 in....	$2.50
15 × 25 in....	1.75	18 × 32 in....	3.00
15 × 27 in....	2.00	18 × 36 in....	3.00
16 × 24 in....	1.80	20 × 30 in....	3.00
16 × 28 in....	2.10	20 × 36 in....	3.70
17 × 30 in....	2.25	20 × 40 in....	4.00
18 × 24 in....	2.10		

Discount, 60%.

SPOKE POINTERS.

Per doz.
No. 1, points 1⅞ in. diameter, $9.00
No. 2, points 2⅜ in. diameter, $15.00

Discount, 15 and 10%.

⅛ dozen in box.

VISE.

(Bench Vise, Steel Jaws.)

3½ in. opens 5 in., weight 12 lbs.
List price, each.$4.00
Net " " .. 1.60

Silent Saw Vise.

No. 10., 10 in. jaw, per doz....$15.00
Dis.. 33⅓%.

No.	per dz.	gr., lbs.	No. Clamp.	per dz.	gr., lbs
1	Amateur vise.....$2.25	70	1½.....	3.00	80
Anvil.			2½.....	5.00	220
2	..... 3.75	200	3½.....	14.25	700
3	.....11.25	615	4½.....	21.00	1,425
4	.....18.00	1,350	Combination hand..... ...	5.25	85
10	.....24.00	1,675			

Spot cash discount, 33, 20 and 2, f.o.b.

Nos. 1, 1½, 2 and 2½ are packed in dozens; Nos. 3 and 3½ in half dozens; Nos. 4, 4½ and 10 in quarter dozens, and No. 20 singly. Each hand vise is put up in neat box and packed in half dozen lots.

1 Hinge pipe vise, 0 to 2 in. pipe.....Each $10.00
2 " " " 0 to 4 in. pipe..... 20.00
1 Malleable pipe vise, 0 to 2 in. pipe..... 8.00
1 Combination pipe and bench vise, 0 to 2 in. pipe...16.00

Discount, 50%.

WRENCHES.

Coes' Knife Handle Wrenches.

BLACK.

Size.	℔ doz.	Size.	℔ doz.	Size.	℔ doz.
6 inch.....	$9.00	10 "	12.00	15 inch.....	24.00
8 "	10.00	12 "	14.00	18 "	30.00
21 inch.....			36.00		

BRIGHT.

4 inch.....	$10.00	10 inch.....	14.00	18 inch	32.00
6 "	10.00	12 "	16.00	21 "	38.00
8 "	11.00	15 "	26.00		

Discount, 55, 10, 7½ and 3 %.

Coes Mechanics' Screw Wrenches, same list, less 55 10, 10, 7½ and 3 %.

A. G. Coes & Co. Pat. Screw Wrenches, same list as above. Discount, 55, 10, 7½ and 3%.

Ice Machines (Family).

No. 1, Ice machine, ice and ice cream molds, 1 lb. ice, $15.00.

No. 2, Ice machine, ice and ice cream molds, 1½ lbs. ice, $20.00.

No. 3, Ice machine, ice and ice cream molds, 1 carafe 1 bottle holder, 2 lbs. ice, $26.50.

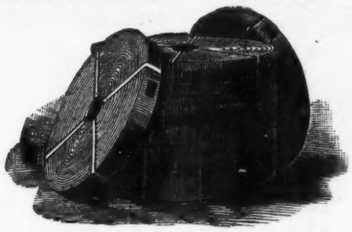
No. 4, Ice machine, ice and ice cream molds, 2 carafe 1 bottle holder, 4 lbs. ice, $33.00.

No. 5, Ice machine, ice and ice cream molds, 3 carafe 1 bottle holder, 6 lbs. ice, $40.00.

No. 6, Ice machine, ice and ice cream molds, 4 carafe 1 bottle holder, 9 lbs. ice, $46.50.

India Rubber Goods.

MECHANICAL.



RUBBER BELTING.

Inches.	2 ply per foot.	3 ply per foot.	4 ply per foot.	5 ply per foot.	6 ply per foot.
1	$0.07	.....	.....	.....	.....
1¼	0.09	.....	.....	.....	.....
1½	0.11	.....	.....	.....	.....
2	0.15	$0.17	$0.21	.....	.....
2½	0.18	0.22	0.26	.....	.....
3	0.22	0.26	0.31	.....	.....
3½	0.26	0.30	0.37	.....	.....
4	0.30	0.34	0.42	.....	.....
4½	0.33	0.39	0.47	.....	.....
5	0.36	0.43	0.52	.....	.....
6	0.43	0.52	0.62	.....	.....
7	0.51	0.60	0.73	.....	.....
8	0.59	0.70	0.84	$1.05	$1.25
9	0.67	0.80	0.95	1.18	1.42
10	0.75	0.90	1.07	1.33	1.60
11	0.83	1.00	1.18	1.47	1.77
12	0.91	1.08	1.30	1.62	1.95
13	1.00	1.18	1.42	1.77	2.13
14	1.08	1.28	1.54	1.92	2.31
15	1.16	1.38	1.66	2.07	2.49
16	1.25	1.50	1.78	2.22	2.67
18	1.41	1.70	2.02	2.52	3.03
20	1.58	1.90	2.26	2.82	3.39
22	1.76	2.12	2.52	3.15	3.74
24	1.96	2.36	2.80	3.50	4.20
26	2.18	2.60	3.08	3.85	4.62
28	2.42	2.84	3.36	4.20	5.04
30	.....	.....	3.64	4.55	5.46
32	.....	.....	3.92	4.90	5.88
34	.....	.....	4.20	5.25	6.30
36	.....	.....	4.48	5.60	6.72
38	.....	.....	4.76	5.95	7.14
40	.....	.....	5.04	6.30	7.56
42	.....	.....	5.32	6.65	7.98
44	.....	.....	5.60	7.00	8.40
46	.....	.....	5.88	7.35	8.82
48	.....	.....	6.16	7.70	9.24
50	.....	.....	6.44	8.05	9.66
52	.....	.....	6.72	8.40	10.08

Dis. Reliance, 60 and 5. Dis. Royal, 60, 10 and 10. Dis Manhattan, 70 and 5. See Leather Belting, page 3; Link Belting, page 9.

PACKING.

Piston Packing.

Round Piston Packing Per lb. 85c. Discount, 60, 10 and 5 per cent.

Square Piston Packing.

Price same as above. Round and square piston packing is made in lengths of twelve or twenty-four feet.

Square Piston Packing. Rubber back, per pound $1. Discount 60 der cent. Best only. Square piston packing rubber back is made in lengths of twenty feet.

Steam Packing.
Cloth Insertion, Rubber Outside.
Cloth Insertion, Cloth on one or both sides.

Thickness.	1-Ply.	2-Ply.	3-Ply.	4-Ply.
1-64 inch	70 cts.	.....	.....	.....
1-32 "	65 cts.	.....	.....	.....
1-16 "	60 cts.	63 cts.	66 cts.	.....
3-32 "	55 cts.	58 cts.	61 cts.	.....
1-8 "	55 cts.	55 cts.	58 cts.	61 cts.
3-16 "	55 cts.	55 cts.	55 cts.	58 cts.
1-4 "	55 cts.	55 cts.	55 cts.	55 cts.

One-ply of cloth to every 1-16 inch thickness.
Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.
All cloth insertion or plain packing is one yard wide, and any length desired.
Wire insertion packing, all thicknesses, per lb, 50 cents.
Discounts: Reliance, 70 & 10; Royal, 60, 10 & 10; Manhattan, 60 per cent.
See Packing, page 10.

HOSE.

Improved "Smooth Bore" Rubber Suction Hose.
On spiral flat or round tinned steel wire.

In. Diam.	Per ft.	Per. Diam.	Per ft.
2 inch	$2.60	7 inch	$13.50
2½ "	3.50	7½ "	15.00
3 "	4.00	8 "	16.50
3½ "	5.50	9 "	19.50
4 "	6.50	10 "	22.50
4½ "	7.50	12 "	27.50
5 "	8.50		
5½ "	9.50		
6 "	10.50		
6½ "	12.00		

Suction hose discount: Reliance, 50 and 10%; Royal, 60, 10 and 5%; Manhattan, 70 and 5%.

SUCTION HOSE.

On spiral brass or iron wire

Int. Diam.	Per. ft.
¾-inch	$ .77
1 "	1.00
1¼ "	1.25
1½ "	1.65
1¾ "	2.10
2 "	2.50

RUBBER HOSE.
Conducting Hose—Two-ply.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft
⅛ in	$0.20	2 in	$0.66	5 in	$1.65
¾ in	25	2¼ in	75	6 in	1.98
1 in	33	2½ in	83	7 in	2.31
1¼ in	42	2¾ in	92	8 in	2.64
1½ in	50	3 in	99	9 in	2.97
1¾ in	58	4 in	1.32	10 in	3.33

HYDRANT HOSE—THREE-PLY.

½ in	$0.25	1½ in	$0.60	2½ in	$1.00
¾ in	30	1¾ in	70	2¾ in	1.10
1 in	40	2 in	80	3 in	1.20
1¼ in	60	2¼ in	90	3½ in	1.40
				4 in	1.60

Discount—Reliance, 60; Royal, 70; Manhattan, 70 and 10 per cent.

GASKETS AND RINGS.

Fibrous.
⅛ inch thick, or less, per lb $0.90
5-32 inch thick, and upwards, per lb $0 80
Cloth Insertion.
1-16 inch thick, or less, per lb $1.25
3-32 inch thick, and upwards. per lb $1.00
There is one ply of cloth to every 1-16 in thickness.
Five cents per pound additional for each extra ply of cloth. Dis., 60, 10 and 5%.

CORRUGATED RUBBER MATTING.

Rolls 1 yard wide, 30 yards long, cut to any size required.

Indurated Fibre Ware.

SPITTOONS.

	Doz.
16 in. dia., 8 in. high	$24.00
12½ in. dia., 5½ in. high	10.80
9 in. dia., 5 in. high	7.80

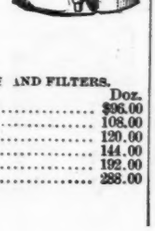
WASH TUBS.

No. 0, 23 in	⅛	12	27.00
Nos. 0, 1, 2 and 3, nested	1	n. 3½	22.50
No. 1, 21 in	⅛	10½	24.00
No. 2, 19½ in	⅛	9	21.00
No. 3, 18½ in	⅛	9	18.00
Nos. 1, 2, and 3, nested	⅛	9¾	21.00

CHAMBER PAILS.

12 in. dia., 9 in. deep, 3 gal, ... 16.00

WATER COOLERS.



	Doz.
2 gal	$32.00
4 "	40.00
5 "	44.00
6 "	48.00
8 "	64.00
10 "	80.00
12 "	96.00
15 "	120.00

WATER COOLERS AND FILTERS.

	Doz.
4 gal	$96.00
5 "	108.00
6 "	120.00
8 "	144.00
10 "	192.00
15 "	288.00

Dis. on all 25 and 20%.

Pails.

	No. doz. in crate.	Cubic feet.	Price per doz.
Ladies' or Weaver's pails, 6 qt	1	2¾	$5.35
Half or buggy pails, 6 qt	1	3	4.80
Star pails (standard plain), 12 qt., stenciled "for fire only" without extra charge	1	3½	6.00
Deck or Mason's pails (same size as Star, but heavier, with heavy wire bail)	1	4	6.60
Railroad or fire pails, 14 qt. (also stenciled "fire" without extra charge)	½	3½	7.80
Fire pails, round bottoms	1	4	7.80
Milk pails, 14 qt	1	4	7.80
Stable pails, flush bottom, heavy wire bail, 14 qt	1	4	7.80
Stable pails, 16 qt., same as above	½	3½	8.40
" 18 " "	½	3¾	10.70
" 20 " "	½	4	12.00
Covers for fire or star pails		1	3.35

KEELERS.

		Doz
A—20 in.	7 in. deep	16.20
B—19 "	" "	15.00
C—18½ "	" "	14.00
1—17½ "	" "	13.20
2—15½ "	6 in. "	12.00
3—13½ "	5 in. "	10.20
4—12 "	4 in. "	9.00

MILK OR VEGETABLE PANS.

13½ in. dia 3¼ in. deep, 6 quarts, $3.60 per doz.

WASH BASINS.

	Doz.
12¼ in	$4.80
12½ in	4.20
11½ in	3.60

Lamps.

Drummond Electric Hanging Lamp, 300 candle power, complete, each $3.50.
The electric lamp, 60 candle-power.
With decorated shades, nickel, per doz. $22.00
With opal plain shades, nickel, per doz. 18.00.
With decorated shades, brass, per doz. 21.00.
With opal plain shades, brass, per doz. 17.00.
Lamp chimney patent for Sun burners.

Per doz. No. 0, 50 cents. No. 1, 60c. No. 2, 75c.
Hitchcock nickel table lamp (No. 654), each $3.25
" " hanging " 656 " 7.25
" " bracket " 651 " 3.50
" " " with reflector 653 " 3.75
" French bronze bracket, with reflector, N 653, each $3.75.

Miners'.
Brass, Collar and Breast in one piece, Spout and Body in one piece.
Price, $9 per gross net.

Demmler Bros.

	Doz.
"Cherry" Miners' Lamps, double spout	$2.00
" Drivers' " "	2.75
" " " single "	2.50

Harp, complete, with square tin shade, per doz., $9.50.
Complete, with Burner and chimney, per doz., $1.50.
Hurricane lanterns 25 cents extra with guards.
875, ⅜ wick, without guards, per doz., $5.00.
876, square safety lifting globe, per doz., $5.50.
877, ⅜ wick, safety lifting globe, per doz., $6.75.
Nickel plated diamond reflector reading lamp, 30 candle-power, $13.50 per doz.
Net.
Illuminated night clock, per doz., $27.

PAPER LAMPS.
Lined with oil proof composition.

	No. 0.	No. 1.	No. 2.
Height,	2½ in.	3 in.	3¾ in.
Diameter,	3½ in.	2½ in.	2½ in.
Weight, ½ doz.,	3¾ lbs.	1¾ lbs.	2 lbs.
Price, $2.75 per doz.	$2.25		$2.75

	No. 0.	No. 3.	No. 4.
Height,	2½ in.	5 in.	6½ in.
Diameter,	3½ in.	3½ in.	4 in.
Weight, ½ doz.,	3¾ lbs.	3½ lbs.	7 lbs.
Price, $2.75 per doz.	$3.25		$4.50

Dis., 20%.

Laundry Appliances.

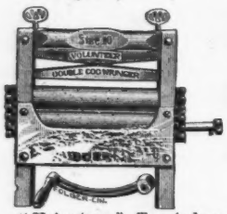
Washing Machine.

THE CATARACT.

All Metal.

Cubic Measurement 15 ft.

Price $20.



Rolls.

"Volunteer." Length, 10 in. x 1¾ in. dia. $40 doz.

"Volunteer." Length 11 in. x 1¾ in. dia. $50 per doz.

"Volunteer." Length 12 in. x 1¾ in. dia. $60 per doz. Dis., 40%.

"Volunteer." Two independent pressure screws,

"Daisy." Length, 10 in. x 1¾ in. dia. $30 per doz.

"Daisy." Length, 12 in. x 1¾ in. dia. $18 per doz. Dis., 40%.

"Empire." Length, 10 in. x 1¾ in. dia. $63 per doz.
"Empire." Length, 11 in. x 1¾ in dia. $74 per doz.
"Empire." Length, 12 in. x 1⅞ in. dia. $84 per doz.
"Empire." Length, 12 in. x 1⅞ in. dia. $87 per doz.
"Empire." Length, 14 in. x 2¼ in. dia. $156 per doz.
"Empire." Length, 14 in. x 2¼ with pulleys. $220 per doz.
"Empire." Length, 16 in. x 2½ with pulleys. $330 per doz.
Dis., 40%.

EMPIRE CLOTHES DRYING BARS. $10 per doz. Dis., 40%.

Closed.

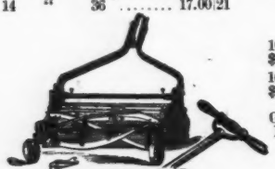
Open for use.

Lawn Mowers.

Forward Cut Mowers.

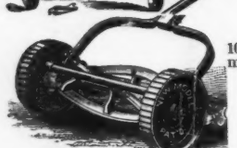
In.	Lbs.		In.	Lbs.	
10	Weight, 30¾	$13.00	16	Weight, 38	$19.00
12	" 31½	15.00	18	" 41	21.00
14	" 36	17.00	21		34.00

Dis. 60 and 5%.



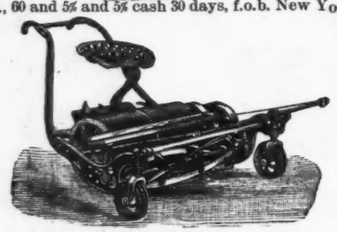
10 in.	12 in.	14 in.
$13.00	$15.00	$17.00
16 in.	18 in.	20 in.
$19.00	$21.00	$23.00

24 in., $30.00.
Geared at both ends.
Dis. 60 and 5 and 5%.



10 in. Croquet, 18 pound, mower..... $11.00
10 in..... 13.00
12 in..... 15.00
14 in..... 17.00
16 in..... 19.00
18 in..... 21.00
20 in..... 23.00

Dis., 60 and 5% and 5% cash 30 days, f.o.b. New York.



New Excelsior Horse Lawn Mower.

25 in. cut,	without shafts or seat	$65.00
30 "	with shaft and seat	110.00
35 "	" " " "	135.00
0 "	" " " "	170.00
Horse boots, per set		12.00

Dis. 50%.

Excelsior Three-Blade Mower and Roller.

8 in., $11.00; 10 in., $13.00; 12 in., $15.00; 14 in., $17.00; 16 in., $19.00; 18 in., $21.00; 20 in., $23.00.

Dis. 60% and 5% cash 30 days f.o.b. New York.

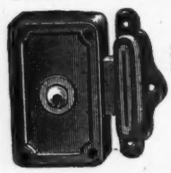
Link Belting.

Price per running foot, net.

No.	Price.	No.	Price
25	$0.13	78	$0.40
32	.13	83	.45
33	.12	85	.50
34	.13	88	.50
35	.14	95	.60
42	.16	103	.75
45	.16	105	.70
51	.20	106	.90
52	.25	107	.80
55	.22	108	.80
57	.24	109	.90
32	.30	114	1.10
36	.30	122	1.50
37	.30	124	1.30
75	.35	146	1.40
77	.35		

Sprocket wheels..... 25%

Locks.



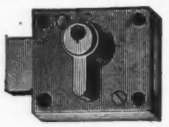
YALE PATENT.
RIM STORE LATCH.

	Per doz.
3 × 5 in., 4 keys	$48.00
2½ × 4 in., 3 keys	39.00

RIM NIGHT LATCH.
Spring lock, 3 keys..... 18.00
Dead lock, 3 keys..... 25.00

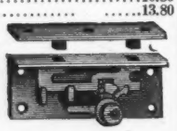
NIGHT LATCH.
Escutcheon..... 39.00
" 36.00

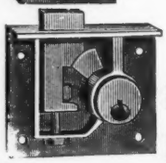
MORTISE DEAD LOCK.
4⅝ × 3½..... 45.00
2⅜ × 3½..... 24.00



CUPBOARD LOCKS.
Plated Nose..... 13.20
Brass Nose..... 12.00

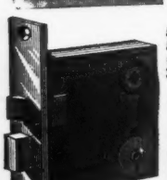
CUPBOARD
Dead Lock..... 10.80
Spring Lock..... 13.80





CHEST LOCKS.
Plated nose..... 19.20
Brass " 18.00

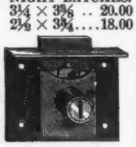
DRAWER LOCK.
Plated nose..... 10.20
Brass " 9.00



KNOB LOCKS.
5 × 3⅜..... 22.50
5 × 3⅛..... 20.00
4¼ × 3⅛..... 13.25
3½ × 3⅜..... 10.50

STANDARD LATCHES.
Dead locks.
3¾ × 2¾....24.00
2½ × 3⅛....14.00
1¾ × 2⅜....12.00

NIGHT LATCHES.
3¼ × 3¾ .. 20.00
2¼ × 3¾....18.00



DRAWER LOCKS.
2 × 1⅝, two tumblers.
Plated nose..... 7.50
Brass " 6.00
Three tumblers.
Plated nose..... 9.00
Brass " 7.50

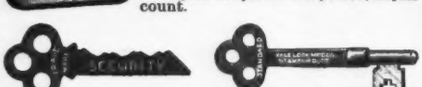
RIM FLUSH DRAWER LOCK.
2 in. diameter.

	2 tumblers.	3 tumblers.
Plated nose	7.50	9.00
Brass "	6.00	7.50

BRONZE SPRING PADLOCK.
2 flat steel keys.

In.	
1	11.00
1¼	12.00
1½	13.50
1¾	14.50
2	16.00
2¼	17.50

Subject to special net prices; no discount.



YALE KEYS.

Machinery—Foot Power.

Engine Lathes

8 in. swing, 20 in. bet. centers, 36 in. bed, 240 lbs. weight, $60.
8 in. swing, 30 in. bet. centers, 46 in. bed, 260 lbs. weight, $70.
8 in. swing, 36 in. bet. centers, 52 in. bed, 280 lbs. weight, $75.

Boxing for export, $2.50 extra; f.o.b. at Cincinnati, 25 % dis.

SAWS AND LATHES.

Victor Scroll Saw, Cuts to 3 Inches.

24-inch swing, with 12 saw blades.... $4
Dis., 20%.

Empire Scroll Saw, Cuts to 3 Inches.

24-in. swing, drill and tilting table.
Price, boxed..... $25
Dis., 20%

The Acme Combination Saw.

Hand or steam power.
Adjustable table and gauges.

Price, boxed	$40
Scroll saw attachment	7
Boring attachment	10
Moulding attachment	10

Dis., 20%.

Paragon Self Feed Rip Saw.

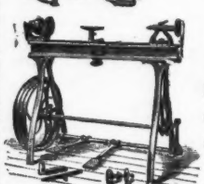
Two changes of speed; three changes of feed.
Price, with one 10 in. saw, $50.00
Dis., 20%.

Diamond Mortising Machine.

With mortise ¼ to 1 in. wide, 3 in. deep.
" cut tenons ⅛ to ¾ thick, 3 in. wide.
Price, with 3 chisels..... $25.00
Dis., 20%

The "Star" Lathe.

Swings 9 × 25 in., back geared screw cutting.
Feeds in or out, right or left. Adjustable Tail Stock for Tapers.
Price..... $75.00
Dis., 15%.



The Crown Lathe.

Swings 10 × 36 in.

Price, boxed	$45.00
Compound slide rest	15.00
Countershaft	10.00

Dis., 20%.

Rival Scroll Saw, with six extra saw blades, twist drill and wrench.
Price..... $10.00
Lathe attachment..... $3.00
Dis., 25%.

The Challenge Scroll Saw, for shell, bone wood, or metal.
Nickel Plated, with six extra saws, twist drill and wrench.
Boxed..... $20.00
With lathe attachment..... $5.00
Dis., 25%.

Hand Circular Rip Saw.

Cuts 3¾ thick, 19 in. wide.

Price $50.00.

Dis.,

Scroll and Circular saw Combined. Combined Machines.
Combined circular scroll saw and boring attachment—2 circular saws, 12 assorted scroll saws, boring attachment, and self-centering drill chuck..... $50.00
Combined circular and scroll saw—2 circular and 12 scroll saws..... 40.00
Circular saw—1 extra rip and 1 cross-cut saw..... 35.00
Scroll saw—12 assorted scroll saws..... 32.00
Counter shaft for steam power..... 10.00
Dis., 35%.

Foot Power Former.
$20.00; Knives extra, $1.00 each.
Dis., 35%.

Mortising Machine.
$22.00; Chisels, $1.00 each.
Dis., 35%.
Blind Slat Chisels, 3 set bits, $5.00.
Dis., 20%.

Tenoning Machine,
Price, $25.
Dis., 35%.

Velocipede Scroll Saw,

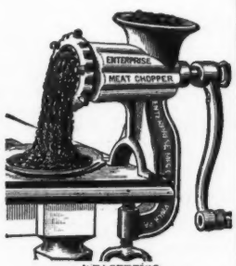
Without boring attachment..... $20.00
With " " 23.00
1 doz. saw blades, 1 3-16 bit. } Included. Dis., 35%.

Lathe.

3 centres, 1 spur, 2 tool rests and sockets, 1 turned face-plate, $35.
Dis., 30%.

Lathe.
One turned face-plate, two pointed and one spur center, two rests, with sockets and plate for hand tools, slide rest-wrench, belting, etc., $40.
Dis., 25%.

Meat Cutters.



American.				Enterprise.					
1	2	3	4	10	12	22	32	42	
each, $5.00	7.00	10.00	25.00	each, $3.00	2.50	4.00	6.00	15.00	
Dis., — —.				Dis., 30%.					

Motors (Water).

Size No. 8, for Sewing Machines, etc., $18 each.
No. 9, ⅛ horse-power (30 lbs. pressure), ¼ h. p. (50 lbs.), ½ h. p. 100 lbs.), ¾ h. p. (150 lbs.), 1 h. p. (200 lbs.), $30.
No. 10, ¼ horse-power (30 lbs. pressure), ½ h. p. (50 lbs.), 1 h. p. (100 lbs.), 1½ h. p. (150 lbs.), 2 h. p. (200 lbs.), $50.
No. 10½, ½ horse-power (30 lbs. pressure), 1 h. p. (50 lbs), 2 h. p. (100 lbs.), 3 h. p. (150 lbs.), 4 h. p. (200 lbs.), $75.
No. 11, 1 horse-power (30 lbs. pressure), 1½ h. p. (50 lbs.), 3 h. p. (100 lbs.), 4½ h. p. (150 lbs.), 6 h. p. (200 lbs.), $100.
No. 12, 2 horse-power (30 lbs. pressure), 3 h. p. (50 lbs.), 6 h. p. (100 lbs.), 9 h. p. (150 lbs.), 12 h. p. (200 lbs.), $175.
No. 13, 3 horse-power (30 lbs. pressure), 5 h. p. (50 lbs.), 10 h. p. (100 lbs.), 15 h. p. (150 lbs.), 20 h. p. (200 lbs.), $285.
Dis., 40%.
Governors for 11 and 12, $25 extra; for No. 13, $35 extra.

Concentrating Machinery.
Blake Improved Crusher: 10x7, weight 7,500; $410.00.
Blake Improved Crusher: 15x9, weight 9,000; $580.00.
Discount 25%.
Cornish Crushing Rollers: 20 diameter, 10 face, weight 5,400; $450.00.
Cornish Crushing Rollers: 20 diameter, 14 face, weight 6,000; $500.00.
Cornish Crushing Rollers: 22 diameter, 14 face, weight 9,500; $625.00.
Cornish Crushing Rollers: 27 diameter, 14 face, weight 13,000; $750.00.
Cornish Crushing Rollers: 30 diameter, 14 face, weight 15,000; $850.00.
Discount 25%.
Complete Sizing Arrangement, consisting of Revolving Screens of Steel Sheet and Hydraulic Classifier.
For Concentrator, 25 tons capacity, $250; 50 tons capacity, $350; 75 tons capacity, $450; 100 tons capacity, $800. Discount, 10 per cent.
Automatic working Jig Machines, all complete, woodword included, with slidemotion: 2 sieves, $310; 3 sieves, $360; 4 sieves, $450.
With Eccentric Motion, all complete, woodwork included: 1 sieves, $200; 2 sieves, $270; 3 sieves, $320; 4 sieves, $330.
Automatic working Double Jig Machines, all complete, woodwork included: 4 sieves, $210; 6 sieves, $335; 8 sieves, $425. Discount, 25 per cent.
Single Rittinger Percussion Tables, all the iron parts, $350; Double Rittinger Percussion Tables, all the iron parts, $500. Discount, 10 per cent.
Improved Rotary Tables, all the iron parts and pipes, $200. Discount, 25 per cent.

Nails and Tacks.

Swedes.	Tacks.								
Per doz.	½	¾	1	1½	2	2½	3		
½ wt..	35	40	46	50	55	60	65	75	
	6	8	10	12	14	16	18	20	24 oz.
	85	1.00	1.20	1.40	1.60	1.75	1.85	2.15	2.55
Doz. full	½	¾	1	1½	2	2½	3	4	
weight	60	70	80	90	1.00	1.10	1.20	1.40	
	6	8	10	12	14	16	18	20	24 oz.
	1.60	1.90	2.30	2.70	3.10	3.40	3.80	4.20	5.00
lb., bulk	½	¾	1	1½	2	2½	3	4	
or paper	1.60	1.25	1.00	80	66	58	52	46	
6	8	10	12	14	16	18	20	24	
36	32	31	30	29	28	28	28	28	

Discount, 67½, 10 and 2%.

O. H. Swedes.
Price, same as Swedes.
Swedes steel tacks same list price as iron.
Discounts, 72½, 10 and 2%.

Upholsterers.
Price, same as Swedes.

Cut Tacks. Price per dozen ounces.

	1	1½	2	2½	3	4	6	8	10
¼ wt.....	..	..	..	..	35	40	45	50	55
	12	14	16	18	20				
	60	70	80	90	1.00				
⅛ wt.	1	1½	2	2½	3	4	6	8	10
	45	50	50	55	60	65	70	80	95
	12	14	16	18	20				
	1.10	1.25	1.40	1.55	1.70				
Full wt ..	1	1½	2	2½	3	4	6	8	
	80	90	90	1.00	1.10	1.20	1.30	1.50	
	10	12	14	16	18	20			
	1.80	2.10	2.40	2.70	3.00	3.30			

Discount, 70, 10 and 2%.

Carpet Tacks, flat and oval heads.

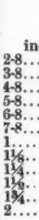
Blued, doz. oz.	4	6	8	10	12	14	16	18	20
¼ wt.	35	40	45	50	55	65	75	85	95
	22	24							
	1.05	1.15							
" ½ wt.	4	6	8	10	12	14	16		
	65	70	80	95	1.10	1.25	1.40		
	18	20	22	24					
	1.55	1.70	1.85	2.00					
Tinned, doz. ¼ wt.	4	6	8	10	12	14	16		
	50	55	60	75	85	1.00	1.10		
	18	20	22	24					
	1.20	1.35	1.45	1.60					
Tinned, doz. ½ wt.	4	6	8	10	12	14			
	95	1.05	1.15	1.40	1.60	1.85			
	16	18	20	22	24				
	2.10	2.35	2.60	2.85	3.10				

Discount, 72½, 10 and 2%.

Finishing Nails.

Inch....	⅝	3½-8	4-8	4½-8	⅝	5½-8	6-8	7-8	1
Per lb...	48	40	32	28	26	24	22	20	18

1½ and larger.
16
Discount, 60, 10 and 2%.



Chair Nails.
Doz. ½ wt.; doz. full wt.; pound B. or P.

Inch..	⅝	3½-8	4-8	4½-8	⅝	5½-8	6-8	7-8
Per lb.	51	43	35	31	29	27	25	23
	1	1½						
	21	19						

Discount, 60, 10 and 2%.

Common and patent brads.

inch.	Price per doz. ½ wt.	Price per doz. full wt.	Price per lb. in papers or bulk.
2-8.....	.50	1.00	1.25
3-8.....	.60	1.20	.80
4-8.....	.65	1.30	.58
5-8.....	.72	1.44	.48
6-8.....	.80	1.60	.36
7-8.....	.90	1.80	.30
1.....	1.00	2.00	.26
1½.....	1.12	2.24	.25
1¼.....	1.26	2.52	.24
1½.....	1.82	3.64	.22
1¾.....	2.25	4.50	.20
2.....	2.43	4.86	.18

Dis. 60, 10 and 2%.

Oils. LUBRICATING.

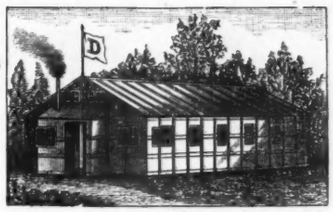
Lubroleine A cylinder oil 50 in. barrels.
Lubroleine D cylinder oil 40 in. barrels.
Lubroleine A machine oil 45 in. barrels.
Lubroleine B machine oil 35 in. barrels.
Lubroleine A engine oil 50 in. barrels.
Lubroleine B engine oil 40 in. barrels.
In cases 5c gal. extra.
Crescent Axle Grease.—Barrels, 3c per lb; 100-lb. kegs 3½c lb.; 2-lb. decorated tins, $12, gross less 5 per cent.
Texas Star Axle Grease.—Barrels, 2½c per lb.; 100-lb kegs, 3c per lb.
See Axle Grease, page 2.

Packing.

Eureka, 75c. per lb. Dis., 40%.
Soapstone—Standard, 8c. per lb.
XX. 11c. per lb.
Crown—No. 1, 23c. per lb.
No. 2, 26c. per lb.
Climax, 9c. per lb. Net.
SELDEN'S PATENT.
For Steam, Air, Water and Ammonia.
With Rubber Core, 60 cents per lb.
Dis., 25 and 5%.
With canvas core, 50 cents per lb.
Dis., 30 and 5%.
See Rubber Packing, page 7.

Portable Houses.

Weight, 450 lbs.
Price, $150.
Closes securely.
Dis., 10%.



Weight, 85 lbs. per section.
Price, $220.
Dis., 10%.

No. 10.—26 × 33 ft., including veranda and rear extension. Main part, 19 × 26 ft..... $500.00

F. o. b. Cars, Chicago or New York

Size.	Doors.	Windows.	No. porch.	End porch	Side porch.
7 × 9	1	2	$64.00	$71.00	$73.00
7 × 12	1	2	75.00	82.00	87.60
7 × 16	1	2	90.00	97.00	106.00
7 × 19	2	4	117 00	124.00	136.00
10 × 9	1	2	70.00	80.00	79.00
10 × 12	1	2	92.00	102.00	104.00
10 × 16	1	4	108.00	118.00	124.00
10 × 19	2	4	134.00	144.00	153.00
10 × 26	2	4	172.00	182.00	198.00
10 × 32	2	6	203.00	213.00	235.00
12 × 12	1	2	102.00	114.00	114.00
12 × 16	2	4	138.00	150.00	154.00
12 × 19	2	4	160.00	172.00	179.00
12 × 26	2	4	193.00	205.00	219.00
12 × 32	2	6	245.00	257.00	277.00

Post Hole Diggers.

Little Giant.....	$36.00	doz 11 cu ft.
Hercules.....	30.00	" " " "
New Champion....	20.00	" " "
Scheidler.....	36.00	" " "

Dis. 40% f.o.b. New York or Boston.

Press.

Combined press for cutting, forming, horning and seaming.
Particulars of flat front presses, including beds, slides, bolsters, plates, etc.
Prices are net, delivered on steamers in New York, including insurance, etc.

Nominal size of press.....	41	42	43	41	450
Price, including et ceteras.....	$130	$200	$260	$420	$660
Weight, about..... lbs	600	1050	1900	3600	7200
Greatest diameter that can be wired..... ins	5	7	10	14	20
Greatest depth that can be wired..... ins	8	10	13	16½	20
Hole through bed—circle intersecting..... ins	4½	6	8½	12	17
Hole through back—width..... ins	8	9½	12	15½	20½
Width between die clamps—clear..... ins	8	11	15	20	27
Distance back from center of slide bar..... ins	4½	5½	7	9	12
Height to slide-bar, when up.. ins	5¼	6½	7½	8½	9
Stroke of slide-bar..... ins	1	1¼	1½	1¾	2
Adjustment of slide-bar..... ins	1	1¼	1½	1¾	2
Diameter of fly-wheel..... ins	20	26	32	38	44
Width of fly-wheel..... ins	3	4	5	6	7
Weight of fly-wheel, about.... lbs	125	250	420	725	1100
Speed per minute, about..... rev	120	110	100	90	80
Cubic feet boxed, about.....	30	40	50	60	70

Printers' Sundries.

Wood rules, 12 cents per yard.
Wood rules, on end wood, 15 cents per foot.

EUREKA STAND.
12 full cases.

Price without cases..... $12.00
Boxing and cartage..... 1.25

SHOOTING STICKS.

Each.
No. 1, 75c.
No. 2, $1.
No. 4, 45c., black.
No. 4, 60c., bright.
No. 5, 60c., black.
No. 5, 75c., bright.

GAUGE PINS—ALL SIZES.

Brass, 40c. doz. | Steel, 60c. doz.
Wire, 25c. doz. | Golden, 40c. doz.

MITRE BOXES.

Regular size, 2 in., 50c. each.
Extra size, 3½ in., 75c. each.

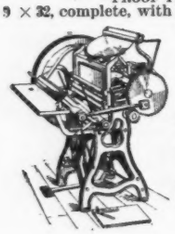
LEAD CUTTER.

Curtis' Lead Cutter $2.00

PROOF PRESS, "OUR OWN."

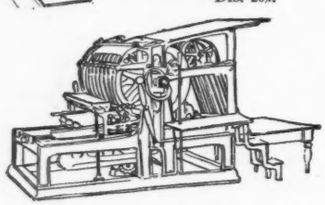
9 × 32, complete, with Brayer $28.00

THE GLOBE PRESS.



8 x 12 in. inside clear, with throw-off	$150.00
9 x 13 in. inside clear, with throw-off	175.00
10 x 15 in. inside clear, with throw-off	200.00
11 x 17 in. inside clear, with throw-off	250.00
Steam fixtures	15.00
Fountain	12.50

Dis. 20%.



THE "LIBERTY" CYLINDER PRESS.

For Newspaper and Job Printing.

Bed.	Form.	
No. 5—29 × 42	24 × 40	$1,200
6—33 × 47	28½ × 45	1,300
7—37 × 51	33 × 49	1,600

Dis., 20 and 5%.

THE "LIBERTY" JOB PRINTING PRESS.

	Size of chase.	
No. 2 — 7	× 11	$200
2a— 9	× 13	250
3 —10	× 15	300
3a—11	× 17	350
4 —13	× 19	400
5 —14½	× 22	500

Dis., 12% and 5%.

Two sizes built extra strong for boxmakers, embossing, etc.

No. 3a—11 × 17 ..... $375
4 —13 × 19 425

Dis., 12 and 5%.

Fountains, either size, $25 extra, if ordered with press.
Steam fixtures, either size, $15 extra.

THE AMERICAN CARD AND BILL HEAD PRESS.

No. 5—4 × 6 ..... $1
7—6 × 9 3
8—8 × 12 6

Dis., 20% and 5%.

THE "LIBERTY" PAPER CUTTER.

Cuts 30 inches $140.00
Extra knife 18.8

Dis., 12% and 5%.

THE "LIBERTY" IMPOSING TABLES

Marble top.

No. 1—24 × 36	$24
2—32 × 48	38
3—26 × 74	44
4—36 × 48	48

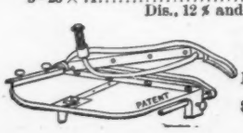
Dis., 12% and 5%.

Slate Top.

No. 1—24 × 36	$18
2—32 × 48	25
3—26 × 74	32

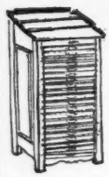
Dis., 12 % and 5%.

Kelsey & Co.



The Eagle Card and Paper Cutter, 24½ inch, $12 each, $100 per doz.

THE "LIBERTY" TYPE CABINETS.



Number of cases.	Stained. Flat.	Stained. Galley.*	Grained. Flat.	Grained. Galley.*
	$	$	$	$
12⅔	12.00	14.50	14.00	17 00
16⅔	15.00	17.50	17.00	20.00
18⅔	16.50	19.00	18.50	21.50
20⅔	18.00	20.50	20.00	23.00
12¾	15.00	17.50	17.00	20.00
16¾	18.00	20.50	20.00	23.00
18¾	19.50	22.00	21.50	24.50
20¾	22.00	24.50	23.00	26.00
12 full	18.00	20.50	20.00	23.00
16 "	22.00	24.50	24.00	27.00
18 "	24.00	26.50	26.00	29.00
20 "	26.00	28.50	28.00	31.00

Number of cases.	Pine. Flat.	Pine. Galley.*	Cherry. Flat.	Cherry. Galley.*	Napanoch. Flat.	Napanoch. Galley.*	Walnut. Flat.	Walnut. Galley.*
	$	$	$	$	$	$	$	$
12⅔	18.00	21.00	20.00	23.00	22.00	25.00	23.00	26.00
16⅔	22.00	25.00	24.00	27.00	26.00	29.00	27.00	30.00
18⅔	24.00	27.00	.....	.....	.....	.....	.....	.....
20⅔	26.00	29.00	28.00	31.00	30.00	33.00	31.00	34.00
12¾	21.00	24.00	23.00	26.00	25.00	28.00	26.00	29.00
16¾	25.00	28.00	27.00	30.00	29.00	32.00	30.00	33.00
18¾	27.00	30.00	.....	.....	.....	.....	.....	.....
20¾	29.00	32.00	31.00	34.00	33.00	36.00	34.00	37.00
12 full	24.00	27.00	26.00	29.00	28.00	31.00	29.00	32.00
16 "	28.00	31.00	30.00	33.00	32.00	35.00	33.00	36.00
18 "	30.00	33.00	.....	.....	.....	.....	.....	.....
20 "	32.00	35.00	34.00	37.00	36.00	39.00	37.00	40.00

—*Furnished with galley top and extra drawer for copy.

Dis., 20 and 5%.

THE "LIBERTY" CASE STANDS AND RACKS.

Stands.

Single, without racks	$3.75
" with racks for 8 full cases	4.00
Single, with racks for 10 full cases	4.25
Single, with racks for 12 full cases	4.50
Single, with racks for 14 full cases	4.75
Double, without racks	4.25
" with racks for 8 full cases	4.50
Double, with racks for 16 full cases, and gal. rest	6.25
Double, with racks for 20 full cases and gal. rest	6.50
" " " " 24 " " " " "	6.75
" " " " 24 ⅔ cases	5.25
" " " " 8 full and 8 ⅔ cases	5.00
" " " " 8 " " 8 ⅔ "	5.25
" " " " 10 " " 12 ⅔ "	5.55
" " " " 12 " " 16 ⅔ "	5.70
" " " " 12 " " 16 ¾ "	6.05
Stands with closed ends, extra	2.00
Extra slides for stands, each	.00

Case Racks.

Cases.	Inches High.	Price.	Inclosed Back and Sides.	Cases.	Inches High.	Price.	Inclosed Back and Sides.
12	41	$6.00	$8.50	30	84	$10.00	$13.50
16	50	7.00	9.50	32	51	12.50	16.00
20	60	8.00	11.00	40	60	14.00	17.50
24	70	9.00	12.00	60	84	18.00	23.00

Dis., 20 and 5 %.

THE "LIBERTY" GALLEYS.

All brass "indestructible."

Single,	3¾ x 23¾ inside	$2.50
"	3¾ x 1-3¾ "	2.00
"	3¾ x 11¾ "	1.75
Medium,	5 x 23¾ inside	2.75
Double,	6¼ x 23¾ inside	3.00

Dis., 33⅓%.

SMOOTH LINED NEWS GALLEYS.

Half-lined.	Full-lined.	Half-lined.	Full-lin.
Single col. $1.75	$2.00	Double col. $2.00.	$2.50

Dis., 20% and 5%.

SCREW GALLEYS.

	Unlined.	Half-lined.	Full-lined.
Single column	$1.25	$1.50	$1.75
Double column	1.50	1.75	2.00

Dis., 20% and 5%.

SMOOTH LINED JOB GALLEYS.

Size.	Unlined.	Full-lined.	Size.	Unlined.	Full-lined.
6 × 10	$1.25	$2.00	12 × 18	$2.50	$3.50
8¼ × 13	1.50	2.50	14 × 20	3.00	4.00
9 × 14	1.75	2.75	15 × 22	3.50	5.00
10 × 16	2.00	3.00	18 × 25	4.00	5.50

Dis., 20% and 5%.

RULED GALLEYS.

These have a rule laid out on one of the rims, divided into quarter inches, by which to set advertisements. Cost of ruling extra, 25 cents.

Dis., 20% and 5%.

MAILING GALLEYS.

Zinc bottom, 50 cents; brass bottom, 90 cents. Brass closed both ends, $3.

Dis., 20% and 5%.

GALLEY RACKS.

From $3 up.

LEAD CUTTERS,

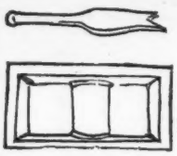
From $2 up.

D[illegible] and 5%.

THE "LIBERTY" TYPE CASES.

Name.	Outside Measurements.
Full size	32¼x16⅛x1 9-16
Rooker size	28½x14¼x1 9-16
¾ size	26x16⅛x1⅝
⅔ size	22⅝x16⅛x1⅝
Enlarged size	32¼x23x2 3-16
Wood type "	32¼x23x1 9-16
Mammoth "	44x23x1 9-16

Cabinet case sides extend 1½ to 3 inches. In ordering cabinet cases, state whether high or low fonts are wanted.



THE "LIBERTY" STEEL SHOOTING STICKS.

Bright, $1 each.
Nickelplated, $1.25 each.
Dis., 40%.

STANDARD METAL FURNITURE

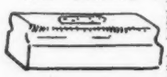
25c. a pound.
In fonts of 25, 50, 75 and 100 lbs.
Dis., 15%.

THE "LIBERTY" MALLETS.

Hickory, small	$ .20
" medium	.25
" large	.30
" iron bound	1.00
Lignum Vitæ, No. 4	.30
" " No. 3	.40
" " No. 2	.50
" " No. 1	.70

Dis. 20 and 5%.

THE "LIBERTY" PLANERS AND PROOF PLANERS.



Midget planer	10c.
Small Maple	20c.
Large "	25c.
" b'ked with leather	30c.
Midget " " "	12c.
Proof planer, faced with cloth	50c.

Dis., 40%.

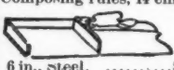
COMPOSING STICKS.

GROVER S PATENT AND UNION.

	Screw or News.
6 in., 1.10	$ .90
8 " 1.20	1.10
10 " 1.40	1.20
12 " 1.60	1.40
14 " 1.80	1.60
16 " 2.00	1.80
18 " 2.20	2.00
20 " 2.40	2.20

Composing rules, 14 ems pica and under, 25 cents.

THE "LIBERTY" COMPOSING STICKS.



Grover.

6 in., Steel	$ .90	16 in., Steel	$1.80
8 "	1.00	18 "	2.00
10 "	1.20	20 "	2.20
12 "	1.40	Extra Clasp	.10
14 "	1.60	Extra Knee	.40

Screw.

6 in., Steel	$ .75	16 in., Steel	$1.45
8 "	.80	18 "	1.60
10 "	1.00	20 "	1.75
12 "	1.15	Extra Knee	.30
14 "	1.30	" Screw and Nut	.10

Dis., 40%.

Yankee.

6-in., Steel	$ .75	12 in., Steel	$1.15
8 "	.80	Extra Knee	.30
10 "	1.00	" Clamp and Screw	.15

Other Sizes to Order.
Dis., 40%.

Albion.

6-in., Steel	$1.00	6-in, German Silver	$1.50
8 "	1.10	8 " "	1.75
Extra Knee	.40	Extra Screw and Nut	.10

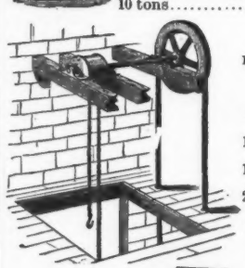
Pulley Blocks.

WESTON DIRECT.

	Each.
⅛ ton	$10
¼ ton	13
½ ton	15
1 ton	20
1½ tons	25
2 tons	30
3 tons	40

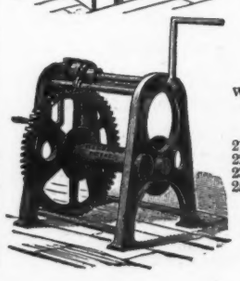
Geared.

1 ton	35
2 tons	45
3 tons	60
4 tons	80
5 tons	110
6 tons	150
8 tons	210
10 tons	250



DOUBLE LIFT HOISTS FOR HATCHWAYS, ETC.

500 lbs	$25.00
1000 "	50.00
1500 "	65.00
2000 "	80.00
500 "	30.00



WESTON CRAB SAFETY BRAKE, HANDLES CANNOT FLY BACK.

	Each.
21	$35.00
22	45.00
23	65.00
25	100.00

Pumps.

Prices on all pumps include cylinders.

No.	Dia. Cyl.	Suction.	Cap. stroke.	Price—Iron.	Price—Brass cyl.
0	2 in.	1 in.	1-15 gal.	$3.50	.....
1	2¼ "	1 "	1-12 "	4.00	$6.00
2	2½ "	1¼ "	1-11 "	4.50	7.00
3	2¾ "	1¼ "	1-10 "	5.00	8.00
4	3 "	1¼ "	1-6 "	5.50	10.00
5	3¼ "	2 "	1-5 "	6.50	14.00
6	3½ "	2 "	1-4 "	8.00	18.00
7	4 "	2½ "	1-3 "	12.00	20.00

Dis., 65%.

1	2½ in.	1¼ in.	1-10 gal.	4.25	.....
2	3 "	1¼ "	1-7 "	4.75	.....
3	3½ "	1¼ "	1-5 "	5.25	.....
4	4 "	1½ "	1-4 "	5.75	.....
5	4½ "	1½ "	1-3 "	6.25	.....

Dis., 70%.

Standard and Cylinder for 1½ in. Iron Pipe, $16.00. Dis., 55%

No. 6½, standard and cylinder, 1¼ in pipe, $13.00.
No. 7½, standard and cylinder, 1¼ in. pipe, $15.00.
No. 8½, standard and cylinder, 1½ in. pipe, $18.00.
With hose and discharge pipe, add $3.00 to list price.
Dis. 55%.

No. 1, diam. cyl., 2½ in.; cap. stroke 1-8 gal.; size pipe, 1¼ in. Price, iron, $12.50; brass cyl., $17.50.
No. 2, diam. cyl., 3 in.; cap. stroke, 1-6 gal.; size pipe, 1¼ or 1½ in. Price, iron, $14.50; brass cyl., $18.50.
No. 3, diam. cyl., 4 in.; cap. stroke, 2-5 gal.; size pipe, 1½ or 2 in. Price, iron, $23.50; brass cyl., $34.50. Dis., 55%.

No. 1, diam. cyl., 3 in.; suction, 1¼ in. cap. stroke, 3-10 gal. Price, iron, $28.00; brass cyl., $58.00.
No. 2, diam. cyl., 4 in.; suction, 1½ in.; cap. stroke, 1-2 gal. Price, iron, $32.00; brass cyl., $60.00.
No. 3, diam. cyl., 5 in.; suction, 2 in.; cap. stroke, 6-7 gal. Price, iron, $35.00; brass cyl., $90.00.
No. 4, diam. cyl., 6 in.; suction, 2½ in.; cap. stroke, 1 1-5 gal. Price, iron, $45.00; brass cyl. $120.00. Dis., 45%.

No.	Diam. cyl.	Cap. stroke.	Stroke.	Pipe.	Price.
0	2 in.	1-11 gal.	7 in.	1 in.	$21.50
00	2½ "	1-7 "	7 "	1 "	23.00
1	3 "	1-5 "	7 "	1½ "	25.25
2	3½ "	1-3 "	7 "	1½ "	27.25
3	4 "	4-10 "	7 "	2 "	30.50
3½	4½ "	1-2 "	7 "	2 "	37.50
4	5 "	8-10 "	10 "	2½ "	44.00
4½	5½ "	1 "	10 "	2½ "	47.00
5	6 "	1 1-5 "	10 "	3 "	50.00

Dis., 40%.

No.	Diam. cyl.	Cap. stroke.	Diam pipe.	Price—Iron.	Price—Br's cyl.
1	2 in	1-5 gal.	1 in.	$39	$51
2	2½ "	1-3 "	1¼ "	41	56
3	3 "	1-2 "	1½ "	45	62
4	3½ "	6-7 "	2 "	51	81
5	4 "	7-8 "	2 "	63	114
6	4½ "	1 "	2 "	80	155

Dis., 40%.

With Tight and Loose Pulleys.

No. 1, cap. per rev., 1-6 gal.; size of pipe, 1¼ in.; price, iron, $26; bronze, $45.
No. 2, cap. per rev., 1-5 gal.; size of pipe, 1½ in.; price, iron, $31; bronze, $55.
No. 4, cap. per rev., 1-3 gal.; size of pipe, 2 in.; price, iron, $48; bronze, $75.
Pulleys on Nos. 1 and 2 are 8 in. diam., 2½ in. face; on No. 4, 12 in. diam., 3½ in face.
Balance wheels for above pumps. $1, $2, and $3, according to size. Dis., 45%.

No. 2, ½ to 2 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, ¾ in.; discharge, ⅜ in.; price, $9.
No. 3, 1 to 4 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, 1 in.; discharge, ⅝ in.; price, $11.
No. 4, 2 to 8 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive 1½ in; discharge ½ in; price $14
No. 5, 3 to 14 gal, per min.; length of drive pipe, 25 to 40 ft.; calabre of pipes, drive 2 in; discharge 1 in; price $22.
No. 6, 4 to 25 gal. per min.; length of drive pipe, 30 to 40 ft.; calibre of pipes, drive, 2½ in.; discharge, 1¼ in.; price, $40.
No. 7, 8 to 60 gals. per min.; length of drive pipe, 30 to 40 ft.; calibre of pipes, drive, 4 in.; discharge, 2 in.; price, $75.
No. 8, 12 to 120 gal. per min.; length of drive pipe, 30 to 50 ft.; calibre of pipes, drive, 6 in.; discoarge, 2½ in.; price, $125. Dis., 45%.

Railroad Dumping Cars and Carts.

Cars.	Gauge.	Cap.	Net	Cap.	Net	Cap.	Net.
Side Dumping	24"	1 c. y.	$55	2 c. y.	$65	3 c. y.	$75*
End "	"	"	55	"	65	"	75*
Revolving "	"	"	70	"	80	"	90*
Bottom "	"	"	80	"	90	"	100*
Tunnel.	"	"	55	"	65	"	75*
Mine.....	"	"	50	"	60	"	70*
Plantation.....	30"		43				
Logging.	36"		170				
"	4' 8½"		185				
Hand.....	36"		45				
"	4' 8½"		50				
Push.....	36"		40				
"	4' 8½"		45				
R.R. Construction	36"		60				
"	4' 8½"		65				
Carts.							
Plantation and Railroad.....			45 to 75				
Wagons.							
McEwen Patent Dumping.....	.....	1 "	175	1½ "	200		

*These cars built of any gauge from 18" to 56½" and of ny capacity from ½ to 6 cu. yd.

Rat Traps.

1 doz. in box.

1 gross in case.

$30 per gross.

Dis. 50 and 10%.

Refrigerators.

Indurated Fibre and Stoneware-Lined.

No. 35. Nos. 75, 85.

No.	High.	Wide.	Deep.	Price.
35	46¼	28¾	20¼	$20.00
75	44¼	33¾	23½	28.00
85	47¾	38	23½	34.00

No.	High	Wide.	Deep.	Price.
2	41	46	26	$36.00
6	84	46	26	60.00

Mirror 16 by 18 in. Dis., 30 and 5%.

Roofing.

CORRUGATED IRON.
2½ inch corrugations.

Gauge.	Per square
No. 18, painted red	$9.10
No. 20, " "	7.60
No. 22, " "	6.50
No. 24, " "	5.35
No. 26, " "	4.65
No. 27, " "	4.35
No. 28, " "	4.00
No. 18, galvanized	13.30
No. 20, "	10.60
No. 22, "	9.10
No. 24, "	7.45
No. 26, galvanized	7.05
No. 27, "	6.95
No. 28, "	6.75

Dis., 10%. F. o. b. N. Y.

Slate.

F. o. b. New York. Stowage allowed.

Purple and Green, per 100 feet sq	$4.50
Dark blue, per 100 feet sq	4.1

Sizes, 24 × 12 = 115 to sq., 650 lbs. weight.
Sizes, 20 × 10 = 170 to sq., 650 lbs. weight.

Sash Chains.

No. A. "Giant" metal, 15c. pr. ft., wts. not over 125 lbs.
No. 1. "Giant" metal, 12c. pr. ft., wts. not over 75 lbs.
No. 2. "Giant" metal, 10c. pr. ft., wts. not over 40 lbs.
No. 0. "Giant" metal, 8c. pr. ft., wts. not over 25 lbs.
No. 1. Red metal, 10c. pr. ft., wts. not over 40 lbs.
No. 2. Red metal, 8c. pr. ft., wts. not over 30 lbs.
No. 0. Red metal, 6c. pr. ft. wts. not over 15 lbs.
No. 1. Steel, 8c. pr. ft., wts. not 75 lbs.
No. 2. Steel, 6c. pr. ft., wts. not over 30 lbs.
No. 0. Steel, 4c. pr. ft., wts. not over 15 lbs.
No. 1. Steel, black enameled, 9c. pr. ft., wts. not over 75 lbs.
No. 2. Steel, black enameled, 7c. pr. ft., wts. not over 30 lbs.
No. 0. Steel, black enameled, 5c. pr. ft., wts. not over 15 lbs.

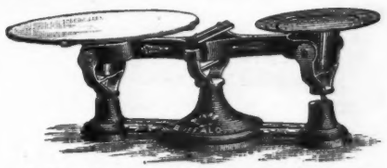
Fastenings for hanging a window of 2 sashes for Nos. 1 and 2 chains, consisting of 4 hooks, 4 rings, 4 sash irons, a set, 18c. per set.
Fastenings for hanging a window of 2 sashes for No. 0 chains, 14c. per set.

Dis. on "Giant" metal chain	40	10	10%	
" " Red metal chain	40	10	10	10%
" " Steel " "	40	10	10	10%
" " Fastenings	40	10	10%	

Scales.—Discount on all scales 50 and 10 per cent.

Postal scales.

No. 1, capacity ½ to 9 oz. $3.00.
No. 2, capacity ½ to 12 oz. $4.00.
No. 3, capacity ½ to 34 oz. $6.00
No. 4, capacity ½ oz. to 4 lbs., $8.00



Butter Trip Scales, slab, weights and scoop.

No. 7, ½ oz. to 10 lbs., 10 in. slab,	without side beam		$10.50
"	"	with "	11.50
" 8 "	" 20 lbs., 12 in. "	without "	12.50
" "	" " "	" "	13.50

Tea Scales—All Seamless Scoops.

Capacity.	Scoop.	Capacity.	Scoop.
¼ oz. to 10 lbs.	Tin ..$8.00	¼ oz. to 10 lbs.	Brass . 9.00

Druggists.

Capacity.	Scoop.	Capacity.	Scoop.
1-16 oz. to 8 lbs.	Tin ..$10.00	1-16 oz. to 8 lbs.	Brass..$11.00

Even balance trip scales, seamless scoop, with weights.

No. 1, capacity ½ oz. to 2 lbs., tin scoop, $5.50 brass scoop, $6.50.
No. 2, capacity ½ oz. to 4 lbs., tin scoop, $6.50; brass scoop, $7.50.
No. 2½, capacity ½ oz. to 18 lbs , tin scoop, $11; brass scoop, $12.50.

Counter.

Capacity.	Scoop.	Capacity.	Scoop.
½ oz. to 36 lbs.	Tin ..$10.00	½ oz. to 36 lbs.	Brass..$12.00

Grocer.

Capacity.	Scoop.	Capacity.	Scoop.
½ oz. to 62 lbs.	Tin... $12.00	½ oz. to 62 lbs.	Brass..$14.00

Meat or Butter Scales, with Slab.

½ oz. to 62 lbs.,	with Single Beam	$14.00
" " " "	Double "	15.00

Patent Boston platform, 13½ in. long by 10 in. wide.

Pillar, 18 in. high, double beam, marked both sides.

With large seamless tin scoop, $25.00
" " " brass " 27.00

Platform scales.—Without Wheels.

No.	Capacity.	Platform.	Price.
1	400 lbs.	21½ by 15 inches.	$23.00
2	600 lbs.	25 by 16 "	30.00
3	800 lbs.	25 by 17 "	34.00
4	1,000 lbs.	26 by 17 "	39.00
5	1,200 lbs.	28 by 20 "	45.00
6	1,600 lbs.	29 by 21 "	55.00
7	2,000 lbs.	32 by 23 "	70.00

With Wheels.

No.	Capacity.	Platform.	Price.
1	400 lbs.	21½ by 15 inches.	$26.00
2	600 lbs.	25 by 16 "	33.00
3	800 lbs.	25 by 17 "	38.00
4	1,000 lbs.	26 by 17 "	43.00
5	1,200 lbs.	28 by 20 "	49.00
6	1,600 lbs.	29 by 21 "	60.00
7	2,000 lbs.	32 by 23 "	75.00

Brass sliding poise at same price if so specified in order.

With Wheels and Drop Lever.

No.	Capacity.	Platform.	Price.
4	1,000 lbs.	26 by 17 inches.	$51.00
5	1,200 lbs.	28 by 20 "	59.00
6	1,600 lbs.	29 by 21 "	70.00
7	2,000 lbs.	32 by 23 "	82.00
8	2,500 lbs.	33¼ by 24¼ "	94.00
9	3 000 lbs.	38 by 30 "	125.00

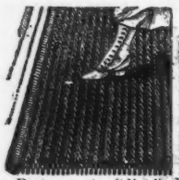
Shears. The Patent "Eureka

No. 1 cuts round metal up to ¼ in. steel to ⅜, $12.

No. 2 cuts round metal up to ½ in., steel to 3-16, $20.

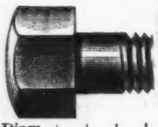
Discount, 25%.

Steel Wire Mats.



Galvanized Steel Wire.	Size	(Style A) "Hartman Flexible."
No. 2.	16x24.	Each ..$1.50
No. 3. "	18x30. "	.... 2.00
No. 4. "	22x36. "	.... 3.00
No. 5. "	26x48. "	.... 4.50
No. 6. "	30x48. "	.... 5.25
No. 7. "	36x48. "	.... 6.50
No. 8. "	36x60. "	.... 8.00
No. 9. "	36x72. "	....10.00

Brass mats "list" double the price of galvanized (Style A) for similar sizes.
3 doz. lots, dis. 33 1-3%
6 doz. lots, dis. 40%.
12 doz. lots, dis. 40 and 5%.



Screws.

STEEL SCREWS ADD 50% TO LIST.
Prices are per 100.
Hexagon Cap Screws.
Heads on Steam-tight Screws not polished, unless so ordered. Can make these 12 inches long.

Diam. head.	7-16	½	9-16	⅝	¾	13-16	⅞	1	1⅛	1¼	1⅜
Length head.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛
Diam. screw.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞		1⅛
¾	3.00	3.25	3.75	4.40	5.50	7.00					
1	3.25	3.50	4.00	4.70	5.70	7.00	9.50				
1¼	3.50	3.75	4.25	5.00	6.00	7.50	9.50	12.20			
1½	3.75	4.00	4.50	5.30	6.30	8.00	10.00	12.20	16.00		
1¾	4.00	4.25	4.75	5.60	6.60	8.50	10.60	12.80	16.60	21.20	
2	4.25	4.60	5.05	5.95	7.00	9.10	11.20	13.40	17.20	22.30	29.00
2¼		5.00	5.40	6.35	7.50	9.70	11.90	14.10	17.90	23.60	30.50
2½			5.80	6.80	8.00	10.40	12.70	14.90	18.80	25.10	32.30
2¾				7.30	8.60	11.20	13.60	15.90	20.00	26.90	34.40
3					9.30	12.10	14.70	17.00	21.80	29.00	37.00
Thread to in.	20	18	16	14	12	12	11	10	9	8	7
Add for each ¼ in.	30	40	50	60	80	1.00	1.30	1.60	2.00	2.40	3.00

Dis., heads ground, 60%; dis., heads black, 60 and 5%; dis., heads extra finish, 50%; dis., heads case-hardened, 5%; dis., heads polished after hardening, 45%.

SQUARE CAP SCREWS.

Diam. head.	3/8	7-16	½	9-16	5/8	11/16	¾	⅞	1⅛	1¼	1⅜
Length head.	¼	5-16	⅜	7-16	½	9-16	5/8	¾	⅞	1	1⅛
Diam screw.	¼	5-16	⅜	7-16	½	9-16	5/8	¾	⅞	1	1⅛
¾	2.40	2.75	3.20	3.80	4.40	5.75					
1	2.60	2.95	3.40	4.00	4.70	5.75	7.70				
1¼	2.75	3.10	3.65	4.20	4.95	6.05	7.70	10.50			
1½	2.90	3.30	3.85	4.45	5.25	6.35	8.25	10.50	14.00		
1¾	3.05	3.50	4.10	4.70	5.55	6.65	8.80	11.10	14.80	18.00	
2	3.25	3.70	4.35	4.95	5.90	7.05	9.40	11.80	15.70	19.00	22.50
2¼		4.00	4.65	5.25	6.30	7.55	10.10	12.60	16.70	20.20	24.00
2½			5.00	5.60	6.75	8.15	10.90	13.50	17.80	21.50	25.80
2¾				6.00	7.25	8.85	11.80	14.60	19.10	23.10	27.90
3					7.80	9.65	12.80	15.90	20.60	25.00	30.50
Thread to in.	20	18	16	14	12	12	11	10	9	8	7
Add for each ¼ in.	25	35	45	55	65	90	1.20	1.50	1.80	2.30	3.00

Dis., heads ground, 65%; dis., heads black, 65 and 5%; dis., heads extra finish, 55%; dis., heads case hardened, 60%; dis., heads polished-hardened, 50%.

MILLED HEADS, COLLAR SCREWS

Diameter of Collar.	¼	11/32	7/16	½	5/8	11/16	¾	1⅛	1¼	1⅜
Diameter of Screw.	⅛	3/16	¼	5/16	⅜	7/16	½	5/8	¾	
¾	2.50	2.80	3.10	3.75	4.40	5.00	6.25			
1	2.80	3.10	3.40	4.05	4.70	5.30	6.60	8.25		
1¼	3.10	3 40	3.70	4.35	5.00	5.60	7.00	8.60	11.25	
1½	3.45	3.70	4 00	4.70	5.30	5.95	7.40	9.00	11.90	15.00
1¾		4.05	4.35	5.05	5.65	6.35	7.80	9.45	12.60	15.60
2			4.70	5.45	6.25	6.85	8.40	10.00	13.35	16.25
2¼				5.95	6.85	7.40	9.00	10.60	14.15	17.10
2½					7.50	8.10	9.60	11.25	15.00	18.00
2¾						8.75	10.30	11.90	15.90	19.00
3							11.00	12.60	16.85	20.00
Threads to inch	40	30	20	18	16	14	12 or 13	12	11	10
Add for each ¼ inch	30	40	50	60	80	1.00	1.30	1.60	2.00	2.40

Dis., 25%.

MILLED FROM SOLID BAR.

Fillister.

Bevel Head.

Button Head

Diam. Head	3-16	¼	5/16	7-16	9-16	5/8	¾	13-16	⅞	1
Length Head	1/8	3-16	¼	5-16	3/8	7-16	½	9-16	5/8	¾
Diam. Screw	⅛	3-16	¼	5-16	5/16	7-16	½	9-16	5/8	¾
Length under Head. ¾	2.00	2.25	2.50	3.00	3.50	4.00	5.00			
1	2 25	2.50	2.75	3.25	3.75	4.25	5.30	6.60		
1¼	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90	9.00	
1½	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	12.00
1¾		3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50
2			3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00
2¼				4.75	5.50	6.00	7.25	8.50	11.50	13.75
2½					6.00	6.50	7.75	9.00	12.00	14.50
2¾						7.00	8.25	9.50	12.75	15 25
3							8.75	10.00	13.50	16.00
Threads to inch.	40	30	20	18	16	14	12	12	11	10

Head on Bevel and Button Head Screws, 1-16 larger in diameter than above specifications.
Price, according to size of head.
Discount, 50%; case hardened, 45%; case hardened and polished, 35%.

Soups (French).

	Per dozen. In Cans. Quarts.	Pints.	In Glass. 1½ pt.
Green turtle	$8.00	$4.32	$9.00
Terrapin			
Chicken	3.75	2.25	
Mulligatawny			
Mock turtle			
Ox tail			
Consommé			4.50
Tomato			
Julienne			
Printanier	3.50	2.10	
French bouillon			
Mutton broth			
Vegetable			None in glass.
Beef			
Pea			
Packed in cases of	2 doz.	4 doz.	1 doz.

Regular Assorted Cases. In Cans—Quarts.
2 Chicken, 1 Mulligatawny, 3 Mock Turtle, 3 Ox Tail, 2 Consommé, 2 Tomato, 3 Julienne, 1 Printanier, 1 Mutton Broth, 1 Vegetable, 1 Beef, 2 French Bouillon, 2 Pea. Per doz., $3.55.
In Glass.
11 Chicken, 1 Mulligatawny, 2 Mock Turtle, 1 Ox Tail, 2 Consommé, 2 Tomato, 1 Julienne, Printanier, 1 Mutton Broth.
Terms cash Discounts: 5% for lots of 10 cases, 10% for lots of 25 cases. 15% for lots of 50 cases.

Spades and Shovels.

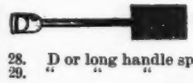
JONES
Patent plain black solid cast-steel shovels and spades.

Patent solid steel shovel.

No.		No. Black.	Per Doz. Black.	Per Doz. Pol's'd
20.	D. or long handle sq.-point shovels.	2	$15.50	$16.50
21.	" " " " "	3	16.25	17.25
22.	" " " " "	4	17.00	18.50
23.	" " " " "	6	17.50	19.00
24.	" " " " charcoal.	8	20.50	22.00

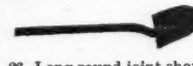
Pt. plain back solid cast steel shovel.

25.	D or long handle round-point shovels.	3	16.25	17.25



Patent solid cast steel spade.

28.	D or long handle spades	2	16.00	17.00
29.	" " " "	3	16.50	18.00



Patent plain back solid cast steel.

26.	Long round joint shovel No. 2		15.50	16.50
27.	" square " " No. 2		15.50	16.50
32.	D. handle square-point molders' shovels	2	.....	17.00
33.	D. handle square point railroad, extra heavy	2	15.75	
34.	D. handle round point railroad, extra heavy	3	16.50	
35.	L. handle round point shovel, with foot cap	2	16.00	17.00

GRAY'S CAST.
Patent plain back solid-steel shovels and spades.

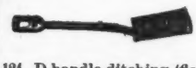
50.	D. or long handle sq.-point shovels.	2	$12.00	$13.00
51.	" " " " "	3	12.75	14.00
52.	" " " round point "	3	12.75	14.00
55.	D. handle spades	2	12.25	13.25
56.	" " "	3	13.00	14.25

Patent solid corrugated cast steel scoop.

SCOOPS.
Jones' patent plain back solid corrugated cast steel scoops.

90.	D. or long handle solid cast steel	2	$13.50	$14.50
91.	" " " " "	4	14.50	15.50
91½.	" " " " "	6	16.50	17.50
	Jones' riveted scoops.			
92.	Cast steel D. or long handle	2	13.50	14.50
93.	" " " "	4	14.50	15.50
94.	" " " "	6	16.50	17.50
			Half polished.	
95.	" " "	8		$20.00
96.	" " "	10		22.50
97.	" " " Locomotive or coal (heavy)	6	17.50	

98.	" Long or D. handle for salt heavy)		17.50
99.	" D. handle flour and house furnace		10.50
100.	" D. handle r'd-pt. for coal (extra heavy)	6	20.00
101.	" ash pit, furnace L. handle	2	Polished. 13.00
102.	" " " 32 in. D.	2	13.50
103.	" " " 42 " iron		
	D. handle	2	14.00



Ditching spade.

124.	D handle ditching (flat)	18.00	19.50
125.	D handle post hole (concave)	18.00	19.50
126.	D handle Alcock (for clay and brick)	16.00	17.00

Discount on shovels and spades, 50 and 10.
" " scoops, 50.
Boxed f.o.b. New York, Boston or Montreal.
The solid shovels, spades and scoops are made from cast steel bars by a recently patented process, the blade and strap being in one piece, not welded. All goods are American patterns.

Stencil Inks.

Black.

No.	Per can.	Per cake.	No.	Per can.	Per cake.
1	7 cents	3 cents	3	20 cents.	12 cents
2	10 "	5 "	4	30 "	20 "

Blue.

1	10 cents.	6 cents	3	30 cents.	22 cents
2	15 "	9 "	4	50 "	40 "

Red and Green.

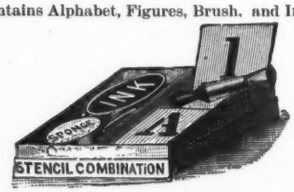
1	12 cents	8 cents	3	50 cents.	42 cents
2	20 "	15 "	4	90 "	80 "

Per doz. cans or cakes, net, per gross, 10% less.

Indelible Ink.

Small bottles per	100	$2.75
" "	500	12.00
" "	1,000	20.00

STENCIL COMBINATIONS.
Contains Alphabet, Figures, Brush. and Ink.



½ inch, per doz		$5.00
¾ " "		5.40
1 " "		5.75
1¼ " "		7.50
1½ " "		8.40
1¾ " "		10.00
2½ " "		15.00

Dis., 10%.

Tools. ARTISANS.

Chisel (Mason).
Stone, 5 and 8c. lb., net.

Mill Picks.
Cast steel, 2 to 3 l $22 per doz.
Dis., 60 and 5%.

Stone Axes, Cast Steel.
All sizes, 50c. per lb.
Dis., 70 and 10%.

Five lbs. and over, 40c.; with teeth, 45c.; 3 to 5 lbs., 45c.; with teeth, 50c.; under 3 lbs., 50c.; with teeth, 55c.
Nos. 40 and 41, spalling or stone hammer, 5 lbs. and ver, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Nos. 40 and 41, spalling hammers, 9 to 20 lbs., steel face, per lb., 17c. Dis., 70 and 10%

Ship or Top Mauls, Steel Face, 4 to 8 lbs., 28c. per lb.
Dis., 50, 10 and 5%..

Steel Wedges, wood, 1st qual., 5c. lb.

Cooper Frocs.

8 in.	₱ doz.	$13.00
10 in.	₱ doz.	13.50
12 in.	₱ doz.	14.00
14 in.	₱ doz.	14.50
16 in.	₱ doz.	15.00

Discount, 60%.

60 days, 2% 10 days.

Vise.

No 1. Solid Box Vises.

	Each.
No. 25, 3⅜ in. Jaw	$12.00
" 30, 3½ "	11.00
" 55, 3⅞ "	10.00
" 40, 4 "	10.50
" 45, 4¼ "	11.00
" 50, 4½ "	11.50
" 55, 4⅝ "	12.00
" 60, 4½ "	13.00
" 65, 4¾ "	14.00
" 70, 5 "	15.00
" 75, 5 "	16.00
" 80, 5¼ "	17.50
" 85, 5¼ "	18.50
" 90, 5½ "	20.00
" 95, 5¾ "	21.00
" 100, 6 "	22.00
" 105, 6 "	23.00
" 110, 6¼ "	24.00
" 115, 6¼ "	25.00
" 120, 6½ "	26.00
" 125, 6½ "	27.50
" 130, 6¾ "	29.00

	Each.
No. 135, 6¾ in. Jaw	$31.50
" 140, 7 "	33.00
" 145, 7 "	35.00
" 150, 7 "	36.00
160, 7¼ "	41.50
No. 170, 7¼ in. Jaw	$44.50
" 180, 8 "	47.00
" 190, 8 "	53.00
" 200, 8 "	56.00

Dis., 60 and 10%.

MINERS.

Adze Eye Coal Picks.
Same list and dis. as No. 16.

Anthracite Coal Picks.
Same list and dis. as No. 16.

Stone Picks, per doz.
No. 18, 6 to 7 lbs...$16.50.
No. 18, 7 to 8 lbs... 17.50.
No. 18, 8 to 9 lbs... 18.50.
Dis., 60 and 5%.

No.	Coal Picks.	Per doz.
16, Weight, 2	lbs	$8.50
16, "	2½ "	9.00
16, "	3 "	9.50
16, "	3½ "	10.00
16, "	4 "	10.50
16, "	4½ "	11.00
16, "	5 "	11.50
16, "	5½ "	12.00
16, "	6 "	12.50
16, "	6½ "	13.00
16, "	7 "	14.00

Packages charged at cost. Dis., 60%.

Adze Eye Miners Picks—Surface, Drifting and Poll.

No.			Per doz.
19, Surface.	No. 1, 4	lbs:	$14.00
19, "	No. 2, 4½	"	15.00
19, "	No. 3, 5	"	16.00
19, "	No. 4, 5½	"	17.00
19, "	No. 5, 6	"	18.00
19, "	No. 6, 6½	"	19.00
19, "	No. 7, 7	"	20.00
20, Drifting,	No. 1, 3	"	12.50
20, "	No. 2, 4	"	14.00
20, "	No. 3, 4½	"	15.00
20, "	No. 4, 5	"	16.00
20, "	No. 5, 6	"	17.50
21, Poll,	No. 1, 3½	"	15.00
21, "	No. 2, 4	"	16.00
21, "	No. 3, 4½	"	17.00
21, "	No. 4, 5	"	18.50
21, "	No. 5, 6	"	20.00
21, "	No. 6, 6¾	"	21.50

Dis., 60, 10 and 5%.

Tamping Picks.

Adze eye, 6 to 7 lbs., per doz., $17.
Adze eye, 7 to 8 lbs., per doz., $18.
Adze eye, 8 o 9 lbs., per doz., $19.
Hunt eye, 6 to 7 lbs., per doz. $17.
Hunt eye, 7 to 8 lbs., per doz., $18.
Hunt eye, 8 to 9 lbs., per doz., $19.
Dis., 60 and 10%.

No.	Ore Picks.	
54, Adze Eye,	5 to 6 lbs.	₩ doz. $12.00
54, "	6 to 7 "	" $13.00
54, "	to 8 "	" $14.00

56, Steel Lake Superior Mining Pick

(Special Price and Quality.)

Dis, 60 and 10

Steel Face Hammers.

No. 43, hand drilling hammers, 2 to 5 lbs.; No. 45, napping hammers, 2 to 5 lbs.; No. 39, mason hammers, 3 to 8 lbs.; No. 42, smiths' hand hammers, 2 to 5 lbs.; No. 44, smiths' striking hammers, 2 to 5 lbs., all steel face, per lb., 26c. Dis., 70 and 10%.

No. 43, hand drilling hammer, 5 lbs. and over, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Dis., 70 and 10%.

Steel Face Sledges.
No. 34. Smiths' sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 35. Stone sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 36. Striking sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 37. Coal sledges, 5 to 10 lbs., steel face, 18c. per lb.

Cast Steel Sledges.
No. 34. Blacksmiths' sledge. 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 35. Stone sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 36. Striking sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 37. Coal sledge, 5 lbs. and over, 30c.; 3 to 5 lbs. 36c.; under 3 lbs., 45c. per lb.

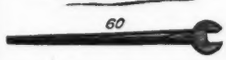
Cast Steel.
No. 42, blacksmiths' hand hammer, 5 lbs. and over 30c.; 3 to 5 lbs., 34c.; under 3 lbs., 45c. per lb.
No. 44, drilling or striking hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 45, napping hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 35c., under 3 lbs., 45c. per lb.
Dis., 70 and 10%.

RAILROADS.

Railway Track Punch

Round Point.
15c. lb., net.

Track Wrench.



7¾c. lb., net.

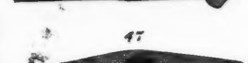
Rail Fork.

9c. lb., net.

Crow Bars.
Wedge Points, 3½c. lb., net.
Pinch Point, 3⅛c. lb., net.

65 Tamping Bar, 6c. lb., net.

66 Claw Bar, 7c. lb., net.



Railroad Spike Mauls 6 to 16 lbs., Steel Face 18c. lb.

Dis., 50, 10, and 5%.

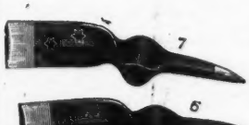
Steel Track Chisel, 15c. per lb., net.

Railroad or Clay Picks.

No.			Per doz.
11, Adze eye,	4 to	5 lbs	$11.00
11, "	5 to	6 "	12.00
11, "	6 to	7 "	13.00
11, "	7 to	8 "	14.00
11, "	8 to	9 "	16.00
11, "	9 to	10 "	18.00
12, Hunt eye,	4 to	5 "	11.00
12, "	5 to	6 "	12.00
12, "	6 to	7 "	13.00
12, "	7 to	8 "	14.00

Dis., 60 and 10%.

Mattocks—Price per doz.
2, Adze Eye, Long Cutter, 6 lbs., $16.00.
3, Adze Eye, Short Cutter, 5½ lbs., $15.50.
2, Adze Eye, Long Cutter, Light, $15.00.
3, Adze Eye, Short Cutter, Light, $15.00.
4, Hunt Eye, Long Cutter, 6 lbs., $16.00.
5, Hunt Eye, Short Cutter, 5½ lbs., $15.50.



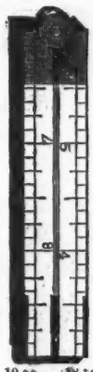
Adze Eye Pick Mattocks.....$16.

Hunt Eye Pick Mattocks.....$16

Dis., 60 and 10%.

Grub Hoes.
Western Pattern, No. 0, 3 lbs., ₩ doz., $10.50.
Western Pattern, No. 1, 3½ lbs., ₩ doz., $11.
Western Pattern, No. 2, 4 lbs., ₩ doz., $11.50.
Western Pattern, No. 3, 4½ lbs., ₩ doz., $12
Baltimore Pattern, No. 1, 3½ lbs., ₩ doz., $11.
Baltimore Pattern, No. 2, 4½ lbs., ₩ doz. $11.75
Baltimore Pattern, No. 3, 5 lbs., ₩ doz., $12.75.
Baltimore Pattern, No. 4, 5¾ lbs., ₩ doz., $13.75.
Dis., 60 and 10%.

CARPENTERS'.



BOXWOOD RULES.

Two feet, four-fold, 1 inch wide.

Plate.	Middle.	Edge.	Bound.
Round joint	$4	...	...
Square "	5	$7	$15
Arch "	6	8	16

Two feet, four-fold, 1⅜ inches wide.

Plate.	Middle.	Edge.	Bound.
Square joint	$7	$9	$18
Arch "	9	11	20

Two feet, two-fold, 1⅛ inches wide.

Square joint.	Arch.	Arch Bound.
$5	$7	$16
12	14	24

Gunter's Slide.
Dis. 80, 10 and 10%.

LEVELS.

	10 to 16 in.	18 to 24 in.
Arch top plate, 2 side views	$9.00	$12.00

PLUMBS AND LEVELS.

Arch top plate, 2 side views.

	12 to 18 in.	18 to 24 in.	24 to 30 in.
Polished	$14.00	$16.00	$18.00
Mahogany	.....	16.50	22.50
Mahogany tip'd and lip'd	27.00	.....	.....
Polished and lipped	.....	.....	24.00
Polished and tipped	.....	.....	28.00
Polished, lip'd and tip'd	.....	.....	35.00

	in.	
Mason's level, 2 plumbs, polished,	36,	$30.00
Mason's level, 2 plumbs, p'd and t'd,	36,	36.00
Mason's level, 2 plumbs, polished,	42,	36.00

PATENT ADJUSTABLE PLUMBS AND LEVEL.

Arch Top plate, 2 side views	26 to 30 in.
Polished and lipped	$27.00
Polished and tipped	30.00
Polished, lipped and tipped	39.00
Mahogany	27.00
Mahogany, lipped	33.00
Mahogany, lipped and tipped	48.00
Polished, triple stock, lipped and tipped	48.0
Mahogany " " " "	60.
Rosewood, lipped and tipped	90.

Dis., 70, 10, 10%

POCKET LEVELS.

Iron top, Japanned	$
Brass top	3.00

Dis., 70, 10, 10%.

SCREWDRIVERS.

Varnished handles, pat. metallic fastening. Size 1½, $1 per dozen; 2, $1.50; 3, $2; 4, $2.50; 5, $3; 6 $3.50; 7, $4; 8, $4.75; 10, $6; 12, $8. Dis., 75%.

BAILEY'S PATENT WOOD PLANES.

Smooth.	Handle smooth.	
9 × 8¾ in.	8 × 2 in.	9 × 2 in.
$2	$2	$2.50 each

Jack.	Fore.	Jointer.
15 × 2⅛ in.	20 × 2⅜ in.	26 × 2⅝ in.
$2.50	$2.75.	$3.25 each

Dis., 40, 10 and 10%.

PLANES, BAILEY'S PATENT IRON.

With pat. lateral adjustment.

Smooth, 8 in. × 1¾ in., $3; 9 in. × 2 in., $3.25; 10 in. × 2⅜ in., $3.75 each.
Jack, 14 in. × 2 in., $3.75.
Fore, 18 in. × 2⅜ in., $4.75
Jointer, 24 in. × 2⅝ in., $6.50 each.
Dis., 40, 10 and 10%.

STANLEY IRON BLOCK PLANES.

3½ × 1 in. 20c.
5½ × 1¼ in. 40c.
7½ × 1¾ in. 60c. each.

ADJUSTABLE.

5½ × 1¾ in. 60c.

7½ × 1¾ in. 85c. each.

Dis., 40, 10 and 10

STANLEY'S BEADING, RABBET, SLITTING AND MATCHING PLANE.

Eighteen Tools, Bits, etc.

$8 each. Dis., 20, 10 and 10%.

STANLEY "ODD JOBS."

Embraces in combination with ordinary Carpenters' Rule:

(1) Try square.
(2) Mitre square.
(3) T——square.
(4) Marking gauge.
(5) Mortise gauge.
(6) Depth gauge.
(7) Mitre level.
(8) Spirit level and plumb.
(9) Beam compass.
(10) Inside square for making boxes and frames.

Price 75 cents.
Dis., 20, 10 and 10%.

Double Gate Brass Valves.

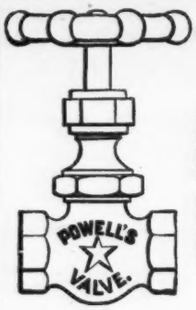
Gland in packing box.

Size.	Screw socket.	Flange.	Diameter of Standard Flange.	Face to face of Screw socket	Face to face of Flanges.	Extra for slide stem and lever subject to discount.
In.	$	$	In.	In.	In.	
½	1.25	.....	.....	2¼	.....	$1.00
¾	1.65	.....	.....	2½	.....	1.00
1	2.15	.....	.....	2⅝	.....	1.00
1¼	3.15	.....	.....	3⅛	.....	1.00
1½	4.25	.....	.....	3¾	.....	1.00
2	6.25	11.50	6	4⅛	4⅛	1.00
2½	11.50	18.00	6½	4 13-16	5⅜	1.25
3	16.00	22.00	7	5	6¼	1.25
3½	21.00	31.00	7½	.....	.....	1.25
4	35.00	43.00	9	.....	7 1-16	1.25
5	52.00	64.00	10	.....	.....	1.25
6	78.00	90.00	11	.....	9	1.25
8	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	.....
12	.....	.....	.....	.....	.....	.....

Rubber-Faced Slide Gate Fire Hydrant.

Diameter of pipe connection.	Diameter of stand pipe.	Diameter of seat ring.	One 2½ nozzle.	Two 2½ nozzles.	Three 2½ nozzles.	Four 2½ nozzles.	Six 2½ nozzles.	One steamer nozzle.	One steamer and one 2½ nozzle.	One steamer and two 2½ nozzles.	Frost case, standard length.
Inches.	Inches.	Inches.									
3 or 4	4⅝	3	$28	.....	.....	.....	.....	.....	.....	.....	$4.50
3-4-6	5¾	4	31	$33.00	$35.00	.....	.....	$33.00	$35.00	$37.00	5.00
4 or 6	7	5	.....	38.50	40.50	.....	.....	38.50	40 50	42.50	6.50
6 or 8	8	6	.....	49.00	51.00	.....	.....	49.00	51.00	53.00	7.50
8 or 10	10	8	.....	.....	.....	.....	.....	.....	.....	.....	.....

For each 6 inches more or less than standard length of stand pipe, add or deduct from list.	For each 6 inches more or less than standard length of frost case, add or deduct from list.	Extra charge for hub.	Independ't nozzle gates each.
$0.60	$0.44	.....	.....
.75	.50	6 in. $0.50	$3.50
.85	.70	No ch'ge	3.75
1.00	.90	8 in. $1.25	3.75
.....	.....	.....	4.50



Star Radiator Valves, with Brass T Handles or Wood Wheels.

Size, inches.	¼	⅜	½
Plain brass	$1.60	$2.00	$2.50
Plated trim'gs.	1.80	2.25	2.80
Rough & Plat'd	2.00	2.45	3.05
Finish'd & P'l't.	2.50	3.00	3.65

Size, inches.	1¼	1½	2
Plain brass	$3.60	$4.80	$7.50
Plated trim'gs.	3.95	5.20	8.00
Rough & Plat'd	4.20	5.50	8.50
Finish'd & P'l't.	4.95	6.50	9.75

Dis., 40, 10 and 5%.

EDDY VALVES.

S. S. & O. S. Class L. & Y. 2.

Class 3 and 4. Cl'ss 4.

Size.	Class 2. Iron, brass mounted. Screw, or flange ends.	Class 2. Add for S S&L	Class 3. All ir'n for gas. Hub ends.	Class 4. Water works valves. Hub ends.	Class 5. Quick opening valves with rack and pinion stem. Iron, brass mounted. Hub ends.	Screwed	Flanged
½	$7.00	$1.00	$8.00	$10.00	$10.00	$9.00	$9.00
2½	10.50	1.30	.....	.....	15.00	14.00	14.00
3	13.00	1.40	10.00	15.00	20.00	17.00	17.00
3½	16.50	1.50	.....	.....	25.00	21.00	21.00
4	18.00	1.70	15.00	18.00	30.00	25.00	25.00
4½	22.00	1.80	.....	.....	.....	.....	.....
5	25.00	2.00	20.00	25.00	35.00	31.00	31.00
	31.00	2.30	25.00	31.00	40.00	37.00	37.00
	37.00	2.70	30.00	37.00	.....	.....	.....
	45.00	3.00	35.00	45.00	55.00	55.00	55.00
	60.00	3.50	48 00	60.00	.....	.....	.....
	80.00	4.00	65 00	80.00	.....	.....	.....

All Iron Valves, Classes 2 and 5, 10 per cent. less than Brass Mounted

Varnish.

E. S. 1827 & Co.

For Finishing Coats.	gal.
Wearing body varnish	$5.50
Medium drying body	5.50
One coat coach varnish	4.50
Wearing carriage	4.50
Heavy gear varnish	4.00
Coach body "	4.00
No. 1 coach "	2.25

For Under Coats.			
Hard drying body	$4.50	Black rubbing varnish	$4.00
Rubbing body varnish	4.00	Priming (1st coat)	2.50
Quick rubbing "	3.50	Filling (2d coat)	2.50
		Rough stuff	2.50

For Inside Work.			
Best flowing varnish	$4.50	Hard oil finish light	$2.75
Best polishing "	4.50	" dark	2.25
Cabinet "	3.00	White copal	4.00

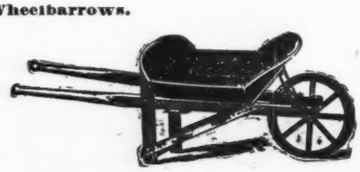
Dryers.			
Japan gold size	$3.50	Brown japan	$1.25
Coach japan	1.75	Liquid dryer	1.25

Discount, 40 per cent. f.o.b. N. Y.

Preservative Coatings.			
Spar coating	$4.00	Exterior car coating	$4.00
I. X. L. No. 1	2.50	Interior car coating	3.25
I. X. L. No. 2	4.00	Locomotive coating	4.00
Floor finish	2.50		

Discount, 35 per cent, f.o.b. N. Y.

Wheelbarrows.



Climax Bolted Barrow, with Wood Wheel per doz. $22.50.
1½ tire of iron,
Common Nailed Barrow per doz. $18.50.
" Bolted " " 18.75.
Lansing's Patent Iron-Bolted Barrow, per doz., $25.50
Capital Patent Bolted Dirt " " " 30.00
Red oak or Government " " " 40.50
Wharf " " " 72.50
Mortar " " " 30.00
Bent Handle Stone " " " 48.00
Coal or Ore " " " 31.50
Pig Metal or Casting " " " 40.50
Brick Yard 20 inch Iron Wheel " each 10.50

Globe Patent Bolted Garden Barrow, Box 30 by 24 by 12 deep, wood wheel } per doz., 42.50.

Capita Patent Barrows

With Iron Tray, A, per doz., ... $39.00
" " " B, " " 42.00

The Leader Iron and Steel Barrows.
Gas-pipe Legs and Handles in one price.

No. 1 Tray of 16 iron, capacity 3 cu. ft. of earth, each $12.
No. 2 " " 14 " " 5 " " " " "
or 250 lbs. of coal ..... " 15
3 Galvanized 18 iron, capacity same as No. 2..... " 15

Water Wheels. Pelton.

	Under pressure of 30 Lbs.	60 Lbs.	100 Lbs.
No. 1, $25	⅛ H. P.	1 H. P.	2 1-10 H. P.
No. 2, $50	¾ "	2⅛ "	5 "
No. 3, $90	1½ "	4 "	8⅛ "
No. 4, $140	2⅛ "	7 "	14¾ "
No. 5, $190	4½ "	12¾ "	26 "

Dis. 15%.

Whiffletree.

Willson spring Jeffery Manufacturing Company.

	Single.	Double.
No. 1, 34 or 36 inches long	$1.25	$2.50
No. 2, " " "	1.40	2.75
No. 3, " " "	1.50	3.00
No. 4, " " "	1.65	3.25

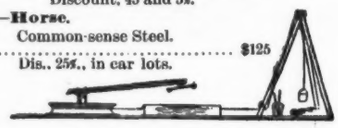
Including either steel hooks or rings'
Discount, 45 and 5%.

Whims—Horse.

Common-sense Steel.

F. O. B $125

Dis., 25%., in car lots.



Windmills.

10 ft. pumping	$75	Plus cost of packing.
12 ft. "	95	
14 ft. "	140	
16 ft. "	225	

Dis., 50 per cent.

"Stover" Pumping Windmills (no tower).

Size wheel.	Wt. packed.	Cubic ft.	Price.
10 ft.	650	50	$80.00
12 ft.	750	58	100.00
"Zenith" Pumping Windmills (no tower).			
10 ft.	650	48	85.00
12 ft.	750	57	110.00
Dis., 50 per cent.			
14 ft.	1,400	108	160.00
16 ft.	1,600	114	250.00
Dis., 45 per cent.			
20 ft.	2,950	220	400.00
25 ft.	4,225	280	600.00
Dis., 40 per cent.			
"Zenith" Geared Windmill (no tower).			
Prices include upper set of Gears and about 5 feet vertical extra heavy shaft in windmill head.			
14 ft.	1,550	178	260.00
16 ft.	1,780	198	300.00
20 ft.	3,170	216	500.00
Dis., 40 per cent.			

Wire Rope.

Circumference in Inches.	Diameter in Inches.	Price in cents per foot best crucible cast steel rope. 19 wires to strand.	7 wires to strand.	Price in cents per foot best bright iron rope. 19 wires to strand.	7 wires to strand.	Price in cents per pound galvanized iron rope. 12 wires to strand.	7 wires to strand.
5½	1¾	100	.....	63	.....	11	10½
5¾	.....	90	.....	64	.....	"	"
5	1⅝	80	.....	58	.....	11½	"
4¾	1½	71	.....	53	.....	"	"
4½	.....	65	.....	48	.....	"	"
4¼	1⅜	60	60	43	39	"	"
4	1¼	50	53	36	34	"	"
3¾	.....	46	.....	33	.....	"	"
3½	1⅛	41	40	29	27	12	10¾
3¼	.....	.....	.....	.....	.....	"	11
3⅛	1″	34	32	26	23	.....	.....
3	.....	33	.....	24	.....	"	11
2¾	⅞	27	25	20	19	.....	12
2½	.....	23	.....	18	.....	.....	13
2¼	¾	21	19	16	14	.....	14
2	⅝	18	14	14	10½	.....	15
1¾	9-16	17	11	12	8	.....	16
1½	½	15	8	10	7	.....	16
1¼	⅜	.....	.....	8	5	.....	17
1	5-16	.....	.....	.....	4	.....	18

Discounts, for export in bond, requiring from four to six weeks time, 55%.